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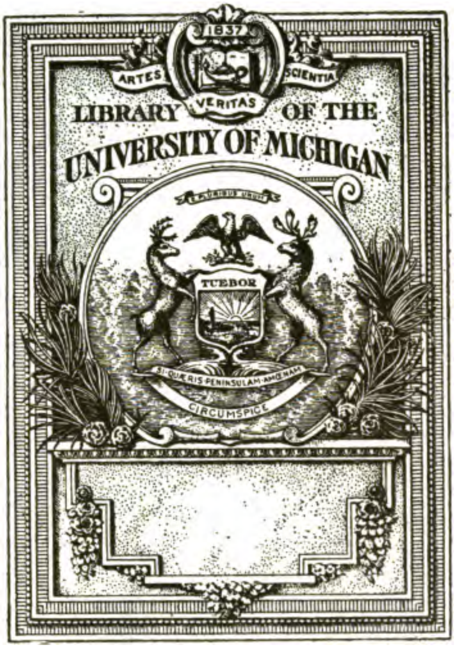

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PROGRESS IN PEDIATRICS.

BY HENRY E. TULEY, A.B., M.D.

LOUISVILLE, KY.

The Constitution of the Association provides that the chairman of each Section shall deliver an address at its first session, which shall be a review of the work done in that special field during the year past, and make any recommendations he may deem best in regard to the work of the Section.

All of the special, and many of the general journals have been teeming with articles of great interest to the pediatrist, and it is no wonder now that this Section has grown to be one of the most dignified and important Sections of the great AMERICAN MEDICAL ASSOCIATION. Its programs are always replete with live subjects by up-to-date men, and its meetings attract many who are unaffiliated with other Sections, the surgeon, the specialist and the general practitioner.

From the time when Dr. Wm. Shippen,[1] the first to give a lecture on diseases of children in this country, delivered his eleven lectures on midwifery in 1762, concluding them with particular lectures on diseases of women and children, with special directions concerning the diet of each, and methods of choosing and making good nurses, to the present time, the advance in the teaching of pediatrics has been steady. How satisfactory it is to look back over the history of the years gone by and see the gradual increase in the recognition given pediatrics in literature, in schools, and in general and special practice! Only very lately the Jacobi ward in connection with Roosevelt Hospital has been established by endowment. This is to be devoted entirely to the clinical study of pediatrics under the pioneer teacher, Jacobi. In this the ideal has been reached, and we trust the example will soon be followed in other great teaching centers.

The wealth of material offered you on our excellent program is the outcome of the zeal and great interest of our efficient secretary, to whom our thanks are due. It has often occurred to me that, if our Section would adopt the policy of the Section on Neurology, in having a permanent Secretary, the interest of its members, individually and oollectively, could much better be served than by yearly changing, as is the present custom. On the secretary largely depends the success of the meeting. When retained permanently he becomes acquainted with those who will attend the Section meetings, and those who are desirable contributors; he knows how long a program should be and the proportion of those promising papers who will attend. This suggestion is offered, believing its adoption will best subserve the interests of the Section.

One of the best methods of arousing interest in the Section is to have published accurate stenographic reports of the discussions, and we feel there will be no complaints arise from this meeting.

It is to be hoped that the members will early subscribe for the requisite number of Transactions of this meeting, to insure the publication of a volume. The volume of the Denver meeting was the first, we think, ever issued, at least the first for a number of years, and it is to be hoped that each session in the future will vote its volume, that the list may be unbroken. In this volume should be included a short biographic sketch of the members of the Section who have died during the year; the Secretary, being in touch with the members in the interim between meetings, could act as a committee of one on necrology, making a yearly report.

Just one year ago, June 12, Dr. John A. Larrabee of Louisville died. He was chairman of this Section in 1896, at the Philadelphia meeting, and lay at the point of death during our meeting at Denver. I am told that the telegram of sympathy sent Dr. Larrabee on his deathbed by the Section was deeply appreciated by him. The only other death that has come to my notice is that of Dr. Ella E. Barnes of Birmingham, in July last. She was a regular attendant on the Section meetings and a regular contributor to its program. I would suggest the appointment of a special committee on necrology, to be appointed at this meeting and to make an early report, the same to be published in the volume of Transactions.

Another matter of considerable importance to the Section is the work done by the O'Dwyer Memorial Committee. This committee is composed of representative from all associations that are devoted to the study of pediatrics. At the Denver meeting of the Section, on motion of Dr. Louis Fischer, a committee from the Section was appointed, as follows: Dr. Louis Fischer, New York City, chairman; Dr. F. E. Waxham, Chicago; and Dr. J. P. Crozer Griffith, Philadelphia. The Memorial Committee has held two meetings at the Academy of Medicine, New York, at one of which an executive committee was appointed, consisting of the following members: Dr. Geo. F. Shrady, chairman, Drs. Dillon Brown, L. Emmet Holt, Godfrey Freeman, Robert Abbe and Louis Fischer. Several meetings of this committee have been held, and their unanimous belief is that the memory of the late Dr. O'Dwyer can best be perpetuated by patterning after his own life's work, establishing a fund, the interest of which shall be large enough to stimulate original research in the department of pediatrics. The writer is informed by a member of the executive committee that Dr. O'Dwyer's nature was so averse to ostentation that the suggestion of a portrait, bust or statue would have been very distasteful to him, hence the committee's decision as detailed. An opportunity will be given the members of the Section to hear from Dr. Fischer of the latest developments in the committee's work.

The question of no morning sessions of the Section is an innovation, and was decided on with some hesitancy by your chairman; but it was finally so arranged with unanimous consent and approval of the executive committee. Only afternoon sessions of the Section were originally intended by the ASSOCIATION, but because of the large number of papers offered, as the various Sections grew, two sessions became the custom. But, as the general sessions of the ASSOCIATION must necessarily be prolonged until late in the forenoon, the Section meetings in the forenoon are delayed in opening, always poorly attended, and but little work done; hence it is believed the arrangement for only afternoon sessions will be appreciated.

Because of the large number of papers on the program for each session, it is hoped that the discussions will be prompt. With these suggestions in regard to the Section work, I will proceed, first to the subject of

INFANT FEEDING.

Infant feeding has received much attention from writers in the past year, and it is gratifying to note with what unanimity cow's milk is recognized and advocated as the best substitute for mother's milk. The advances made have been in the direction of an easy and correct method of home modification. It is gratifying that the Walker-Gordon laboratories are being established in all the larger cities, and we hope shortly to have one in Louisville, but even these, where available, are denied many on account of the cost. The method of artificial feeding which will prove most popular with the laity must embody two requisites: cheapness and ease of preparation. On the physician, then, devolves the great burden of educating the people beyond the indiscriminate use of proprietary foods, and the importance of accuracy in the preparation of the food prescribed.

The best food, almost without exception, is cow's milk. Unfortunately, the average physician has not learned the importance of thinking of cow's milk as capable of modification to meet the needs of the child, beyond the vague instructions, perhaps, to add a little water for dilution. He has not learned to think in percentages—the first principle of milk modification—nor that the adaptation of percentages can not be governed by the age of the child, but the individual capacity of the child to digest milk made after certain formulæ. When this has been learned, the best method of modification is to be adopted, and the latest developments have been in the direction of simplifying that process. The ideal method is, of course, by the Walker-Gordon laboratory, when this is available; for the laboratory has come to stay, a prediction made by an esteemed member of the executive committee of this Section, Dr. A. C. Cotton, in his admirable Chairman's Address at the Atlanta meeting of the ASSOCIATION.

When home modification has been decided upon, most excellent results can be had from the method suggested by Dr. Wm. L. Baner[2]. There have been many methods suggested, all embodying some arithmetical calculation, more or less simple, but in the writer's hands none has proven so satisfactory as that of Dr. Baner. Looking to a greater simplifying of home modification, Estraus, a New York merchant, has devised a simple apparatus which he has called the Materna. This consists of a glass graduate on which there are seven panels, with horizontal lines marked on the different sides to indicate the amount of each ingredient of a milk mixture, to produce different percentages of the milk. An objection to the original model made by Dr. J. P. Crozer Griffith[8], was the marking on the various panels certain weeks and months, to indicate the age at which the milk is to be changed to a stronger mixture, which Dr. Griffith urged, placed too much power in the hands of the mother. On his suggestion, a new model will be prepared, which will correct these features, the various formulæ being designated by numbers.

Unfortunately for the physician as well as for the laity and the poor little ones who must feed upon milk, the average milk-supply of cities is markedly inferior, dirty, impure, diluted and entirely unsuitable. Without an adequate municipal control and inspection of the dairy, and general supervision of the handling of the milk, the baby is bound to be the sufferer. For home modification an unvarying standard of milk and cream is the first requisite, a thing most difficult to be obtained in most cities. We hope this question of milk supervision and inspection of dairies will be urged in all municipalities by the doctors, as they are deeply interested.

PNEUMONIA.

The subject of pneumonia has been considered by many authors, and it is surprising, but pleasing, to find what unanimity there is in regard to its treatment. Lobar pneumonia is regarded as a self-limited disease, and we are cautioned that there is danger in over-medication in children so afflicted. We have learned also that cold is always to be preferred as an antipyretic to medicine. Dr. Thomas J. Mays, Philadelphia, has done much to popularize the use of ice in the treatment of pneumonia of all ages, and the writer has seen some most excellent results from its use. The author just referred to has lately given some statistics showing a death-rate, in all ages, with the use of ice, of 4.25 per cent. in 400 reported cases.

The pulse should always be the guide for stimulation, both when to administer the stimulant and how much. The conduct of a case of pneumonia now and that of even ten years ago is very different indeed, due entirely, we believe, to the extended knowledge of the pathology of these morbid conditions. Some, however, even now, advocate the use of flaxseed poultices in pneumonia, Chase[4] reporting 45 cases in which certain methods of treatment at present in disrepute were used. He concludes by saying: "Poultices are of much value, the effect is soothing, pain is diminished, dyspnea relieved and râles lessened."

DIAGNOSIS OF THE EXANTHEMATA.

The importance of an early diagnosis of the exanthemata is generally recognized, unless it be by some of the laity who expose their children purposely to contagions when they are young, in order to have them through with it. Every means at our command should be used for the differentiating of the skin lesions of childhood. As an aid to diagnosing measles, Koplik[5] has described a characteristic change which occurs in the mucous membrane of the mouth, and which Guttman[6] considers the only pathognomonic sign of measles. He describes it as a "very small, round, bluish-white spot, of more or less uniform size and shape, with either a definite area of congestion or a diffuse red background. They never ulcerate, occur on the mucous membrane of the cheeks and lips, rarely on the tongue,.and not on the gums, pharynx, hard or soft palate."

It occurs to the writer that it is a most decidedly bad practice to dub a pathologic condition with an author's name, as has been done in this instance, the condition being referred to as "Koplik's Spots." Rather refer to it, as one author has done, as the "Buccal Eruption in Measles, Koplik," which will be infinitely more easily classified in indices. Far be it from my intention to wish the author who first described this condition shorn of the honor which is his for first mentioning it. We are greatly indebted for his acumen in first noticing it and publishing his observations, but it is the practice of obscuring a good diagnostic sign by not recording it more definitely and in detail, that we protest against.

Another sign described by Bologni is the sensation of rubbing or crackling imparted to the flat hand placed on the abdomen of the patient, whose legs are held fully extended. Dr. A. Koppenorden[7] observed the phenomenon in a number of cases, in an epidemic comprising 300 cases, and describes it as a sensation of crepitation, felt by the fingers, due, he believed, to air in the intestine. It is described as very characteristic when felt. (The writer has not been able to verify this condition in a number of cases.)

DIAGNOSIS OF PERTUSSIS.

Of equal importance is the early diagnosis of pertussis; which Wagner[8] claims is possible quite early, and at once, by bacteriologic examination of the nasal secretions. He states that the secretions of the normal mucous membrane of the nose contain very few bacteria, while in whooping-cough we find a large mass of bacteria of one kind, a natural pure culture of "polbacteria." This bacteria, when full grown, is two to three times as long as it is broad, is rounded and somewhat thickened at its ends, and is divided in the middle. The method of staining used by the author consists of methylene blue in a weak alkaline solution. This stain is then decolorized by a 2 per cent., freshly prepared argonin solution, which reduces the methylene blue in the cells and their nuclei quicker than in the bacteria. To prevent a re-oxidation of the leukómethylene-blue by atmospheric oxygen, the specimen is washed with a concentrated solution of cream of tartar. He mentions the case of Czaplenski, who was taken ill with whooping-cough during the study of the disease, the examination of his nasal and pharyngeal secretions showing the same bacterium he was studying, thus verifying the bacterium as the cause of the disease. This is certainly worthy of further investigation.

PREVENTION OF OPHTHALMIA NEONATORUM.

While we have always believed that there was no danger in the universal employment of the Credé treatment of the eyes of the new-born, the pendulum has swung backward of late, and a number of authors are reporting cases in which the 2 per cent. nitrate of silver solution instilled into the eyes has been the cause of trouble, such as haziness of the cornea or a severe conjunctivitis. Some would limit the use of the silver solution to those cases in which there is a vaginal discharge in the mother, others advocate the universal use of it, despite ill results in a few cases. It would seem that in protargol and argonin we have efficient remedies, as their continued use in the hands of a number of observers has demonstrated clearly that they have a place in therapeutics. Perhaps if one were substituted for the nitrate of silver, a modified Credé treatment, less evil would result and the same good be obtained. It certainly warrants further trial, despite one case reported by Wilson,[9] of ophthalmia developing in eyes in which protargol had been used immediately after birth. Peck[10] recommends the use of protargol and argonin in the treatment of purulent ophthalmia of infants, because of the quicker destruction of the gonococci, the earlier disappearance of secretion, and of inflammatory process, and the restoration of injured corneal and conjunctival tissues. It is used in a 5 per cent. solution. This is a most important subject for the pediatrist, the obstetrician and ophthalmologist as well. The specialist tells us an alarming number of children are totally blind as the result of gonorrheal ophthalmia. We should find a universally safe remedy to be used as a prophylactic, as it is an injustice to the child for it to be left to the physician's judgment as to the necessity of using a mild or more active prophylactic.

DISEASES OF THE MIDDLE EAR.

Dr. Wm. Cheatham,[11] Louisville, has published a paper in which he discussed the special germs found in inflammatory conditions of the middle ear. A brief reference is made to the importance of bacteriologic investigation in suppurative inflammation of the middle ear. The article dealt chiefly, however, with otitis media acuta, due to cold and catarrhal extension from the nasopharynx, in which the pneumobacillus of Friedlander and the diplococcus of Fränkel play an important part. He reports a case of acute suppuration of both middle ears, the left resulting in attic trouble, the pus showing externally, posterior to and on the superior edge of the external auditory canal. In this case there was also an acute primary tonsillitis, in which a pure culture of the diplococcus of Weichselbaum was found, the same organism found in the pus from the ears. The writer has had in his service, at the Masonic Widows' and Orphans' Home, a series of cases, in a short period of time, in which there occurred acute middle-ear trouble, beginning with a chill, rapid rise of temperature, pain and rupture of the drum membrane. One child, a girl, developed a lobar pneumonia before the discharge from the ear had ceased. Cultures from the ear were taken and examined in the bacteriologic laboratory of Kentucky University, by Dr. Florence Brandeis, the pneumococcus, along with other cocci, being found. This brings us to a practical point in these cases: Can the pneumonia in any way be prevented by thorough and early cleansing of the ears of all children who have had a perforation of the drum membrane from acute middle-ear inflammation? Should not all children so afflicted be isolated until discharge from the ear be found free from the diplococcus, tubercle bacillus, etc.? So many cases of acute middle-ear trouble at one time have never been seen before in the history of the institution.

CHILDHOOD IN ITS RELATIONS TO EPILEPSY.

It was with pleasure we read the paper by Dr. Hugh T. Patrick,[12] Chicago, entitled "The Epileptic Child and His Future." In the paper he ably puts forward the advantages of the colony treatment of epileptics, and we wish it might be placed in the hands of every State legislator in the Union, for careful perusal. The success of the two state institutions in this country, Ohio and New York, has been so apparent that other progressive states must soon fall in line. It behooves the members of this ASSOCIATION to bend every effort to have their legislative bodies investigate this matter and speedily provide like institutions.

TYPHOID FEVER.

Typhoid fever in infants and children presents many characteristics of interest, and much more is known now of it than formerly. A number of reports have been made of cases in cities where there have been epidemics, notably Philadelphia, which holds the palm for the severity and duration of its epidemic, and we have learned much from these observations. [illegible], in a recent article, reports a case of typhoid fever in a child nearly two years old, without any lesion in the intestine, though all the clinical phenomena and the Widal reaction were present, the bacillus of Eberth being found in culture from the mesenteric glands. The same author recites fifteen cases from literature, the typhoid bacillus being found in the spleen, liver, kidneys, lungs, mesenteric glands, heart and biliary passages, showing that wherever is the nidus of bacterial growth the toxins will cause symptoms of typhoid fever. Griffith[14] has found typhoid in children in whom the autopsy did not reveal lesions in the intestine. He states that it is a characteristic condition in the fetus, but less so in older children. Yet, in this day of enlightenment, physicians will still use the so-called Woodbridge treatment of typhoid fever! That typhoid fever may occur in infants under one year of age can not now be disputed, though under ordinary conditions it is infrequently seen.

ANTITOXIN TREATMENT OF DIPHTHERIA.

This address would not be in a measure complete without a reference to the antitoxin treatment of diphtheria. No therapeutic agent in the history of medicine can be compared to it in value. It is quite true that there is nothing quite so uncertain or misleading as statistics; they can be dexterously handled by those for and against a proposition, in order to prove a point, but when one is overwhelmed with the "brute force of figures" there is no room for discussion. In this country as well as abroad there are most gratifying statistics in regard to this remedy. The Chicago Board of Health has just published a remarkable table[16] showing the deaths from diphtheria and croup for the period 1886 to 1895, before the antitoxin was in use. During this time there were 14,175 deaths, a yearly average of 1,417, while in the subsequent three years of antitoxin treatment there were only 2,552 deaths from the same cause, a yearly average of 851. The *Philadelphia Medical Journal,* commenting on this report, says editorially: "Without regard to any change in population there have been absolutely 566 fewer deaths from diphtheria and all croup each year of the last three years than the average number of deaths from the same diseases during the preceding ten years; an actual, not comparative or proportional saving of 1,698 lives from this class of diseases during the antitoxin period." Another striking feature, already impressed on our minds, is in regard to the time of injection of the antitoxin. Of 129 cases treated on the first or second day of the disease, there were no deaths, and only three deaths among 114 treated on the third day, a mortality of 1.23 per cent. in 243 cases. Truly, these figures should make the heart of every physician glad, and encourage him to the prompt use of this valued remedy. It is no experiment now; it is an indisputable fact.

NEW INSTRUMENTS.

Among the new instruments suggested during the year, of special interest to the pediatrist, are the modified intubation tube, from the original by O'Dwyer, and two specially devised tongue-depressors. Dr. H. D. Chapin[17] has suggested one which is small and curved forward, so that when the end has reached the tip of the epiglottis, the base of the tongue would be well controlled. Dr. A. D. Blackader[18] has suggested a somewhat similar one, curved so as to adapt itself exactly to the base of the tongue. On the distal extremity a blunt fork is fixed, of which two branches descend, one on either side of the laryngeal orifice. The instrument serves to control the tongue, pull forward the rima glottidis from the posterior wall of the pharynx, and is of exceptional value for use of the laryngoscopic mirrror. The movements of the child must be controlled by a sheet rolled around its arms and legs, it being carefully held on the knees of an assistant.

EDUCATION OF THE CHILD.

The question of education of the child has been too long neglected by the physician; and when it was considered of old it was only to be at war with the pedagogue. Under the new régime, educators have taken up "Child Study," in which this war bids fair to end. There is a clearer understanding between the educator and the physician; a mutual assistance to a better knowledge of physiologic psychology. It is no longer education at any cost, health being the last consideration; now the teacher realizes she is partly responsible for her charge's health. Unhygienic requirements of education and unsanitary conditions in school life, so long in vogue, are now pointed out, and it is to the physician that the teacher must look for guidance along these lines. It is no longer "take the child out of school," but "remedy the unhygienic conditions which are making the acquirement of education incompatible with health." The educator has met the physician more than half way, and child study, and the new physiologic psychology, now engrossing the minds of educators, are the result. For the newest points in regard to this subject, from the standpoint of the educator, the writer is indebted to Miss Patty Hill, the efficient superintendent of the Louisville Free Kindergarten Association.

Small, accurate manual work, both in the kindergarten and lower grades, has been given up, because productive of nervousness and undue fatigue. Abnormalities of sight and hearing are more closely observed, bad breathers are singled out, and much that is pathologic is corrected by bringing it under medical observation when these troubles are in their incipiency.

Observations are now being made on entirely independent lines, of the waves of vitality and fatigue, that adjustment of the most difficult studies of the day may be made according to the periods of the strength and decline of physical force. In this connection may be mentioned the work of a memeber of this Section, Dr. W. S. Christopher, Chicago, on the ergograph, a delicate instrument for accurately registering the fatigue of a child at various times during the school day. Useless wear and tear, fatigue and irritability are thus avoided.

Washing of school floors with antiseptics, the individual drinking-cup, and every detail looking to the prevention of disease is intelligently considered, and the educator is now crying for the medical inspection of schools. This has already been adopted in several cities, with most gratifying results.

It is the ordinary, commonplace things in the child's life to which our attention must be directed; look to the prevention of such diseases as we can in the ordinary school life of our own children and those of our clientèle; influence state and municipal legislation for the good of the child, the school and the community. If need be, enter politics yourselves, and bring about much-needed reforms.

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THE DEATH-DEALING LONG-TUBE NURSING-BOTTLE.

BY ERNEST WENDE, M.D.,
BUFFALO, N. Y.

It is not my intention to enter into a controversy on infantile mortality from diarrheal diseases, its deplorable rate, and the causes which are responsible for it. These latter have been carefully studied, and are, briefly: bad air, summer heat, ignorance of simple hygiene, and especially artificial feeding.

To the correction of all these possible factors have been directed the efforts of municipal authorities, the medical profession, societies, philanthropists and others. Tenement-house construction has been corrected and regulated by ordinance, the evils of the heated term mitigated by fresh-air missions, free ice and the like, maternal ignorance enlightened by educational circulars, and finally, sanitary protection has been given to milk from dairy to nursery, as has been extended to no other industry, and this largely, if not almost entirely, with the interest of infantile feeding in mind.

With regard to diet, the child should live on food provided for it—milk—the only food which contains all the principles essential to life and growth. The infant structures grow by selecting with unerring accuracy, from the blood, the materials akin to their own composition. For the first six months the child should draw his supplies exclusively from the maternal fountains. When, however, the full and finely-chiselled bust of napkins or towels, the mammary gland of the mother of today, is insufficient for the performance of its functions, we must have recourse to lacteal glands less esthetic and beautiful—those of the cow, goat, or ass—in preference to the wonderful feeding stuffs now so largely advertised in the daily and the medical journals. "An honest farmer who pastures his own cows on a healthy farm is the man to be employed to furnish milk to the poor little baby who has to seek another dairy than his mother's. And if the milk is not sweet, fresh, and pure, pathologic changes will be developed, thereby rendering the gastro-intestinal tract more susceptible to irritants, and the production of cholera infantum results—when the baby gets beyond hygiene and enters the domain of medicine.

While all these causes of diarrheal disease in infancy have, as stated, been carefully studied and their influence minimized, and while also the so-called long-tube nursing-bottle has been condemned, the extent of its evil possibilities, from its intrinsic construction, has been in part elaborated.

It is almost needless to state that an infant previously enjoying an environment of continual warmth and moisture, entirely devoid of infection, that was aseptically and insensibly nourished by osmosis should not have a hose several inches in length, remarkably efficacious for the propagation and the passage of pathogenic microorganisms, placed in direct communication with its very susceptible, excitable and over-sensitive stomach. Facility of access is the only recommendation attaching to such a plan, but this is altogether outweighed by the terrible risk necessarily involved. Decidedly its only use and adaptability to lessen the danger of infection is its employment for the flushing of the lower bowel of the child.

The object of this paper is to briefly give the perilous and untrustworthy features of the so-called long-tube nursing-bottle, and to show justification for not only interdicting it, but doing so by law. Something definite should be aimed at and done to protect and save the help-less offspring of the ignorant and indifferent. The myriads of little ones it has already slaughtered should be sufficient to inspire us to enact elaborate laws, to be administered with the greatest care and strictness, in order to prevent parents and those in charge of infants from committing a variety of acts inconsistent with duty, judgment and common sense—for there is more virtue in the power of law than in circulars of instruction or education.

The chain of protection sought to be placed against these most prolific sources of cholera infantum is no stronger than its weakest link, and this weak link has been the apparently innocent but death-dealing long-tube nursing-bottle. No factor has been more deadly, none so subtle as this device. Conceived in the interest of labor and time saving, appealing to the poor and overworked housewife, it has invaded the home under false pretense as has no other appliance, but has left in its trail a record of mortality. Its dangerous possibilities, now well known, have caused the physician to taboo it for some time, yet its convenience has been so great, and its innocence so reasonable, that its apparent merits have, in only too many instances, been considered above the warnings against it. So certain is its malignant bearing on the artificially fed infant that its manufacture, sale and use should be prohibited by law, and, recognizing this fact, it has been so interdicted by the Buffalo Department of Health.

The peculiar features of danger from its employment may be summarily stated, that owing to its construction and material, and to the use to which it is put, probably no better incubator of pernicious micro-organisms and their toxins could be easily designed, as none have proven so successful. To the details, which render this statement plausible, your attention is asked, as well as to the experimental work which has been done in absolutely demonstrating, step by step, the vicious results created by the utilization of this contrivance, and how and why it is vicious; why it should, in all communities, be condemned and prohibited. Its popularity and foothold have been so strong that it also has had a commercial significance, and its abolition in Buffalo has not been without remonstrance and even the cloud of possible litigation. With the elimination of this, the greatest source of artificial infant-food contamination in the household, with a judicious observance of sanitary care of milk in homes, as supplementary to official surveillance of possible and preventable causes, it is not visionary to expect a reduction in death-rates in proportion as efforts based on our present knowledge can be made effective.

As milk is an almost universal food for bacteria, its reception in a rubber tube, acquired from a coagulum that is normally cavernous and unstable, invariably presenting surfaces that are rugose and unpolished, rendering asepsis an impossibility, must necessarily augment the conditions favorable for the growth and development of micro-organisms, and finally convert it into a nursery which produces conditions favorable to cholera infantum.

To establish, beyond peradventure, the danger of these tubular thoroughfares for the introduction of pathogenic microbes into the infantile economy, and the justification of suppressing them by legislation, I, as a health official, resorted to a series of investigations, microscopically, bacteriologically and chemically. The microscopic examinations of transverse sections, cut from unemployed rubber tubes taken from nursing-bottles procured at the various drug stores of our city, revealed the fact that they were manufactured out of rubber sheeting cemented together at their longitudinal margins to complete the tubes, and the seams thus formed were found unfailingly imperfect in their construction, showing, throughout their entire length, elongated pits and sinuses, which, in their functions, can only be likened to our modern bacteriologic "breed ovens." In some instances, this state of affairs was further intensified in that the tubes were constructed of more than one layer, between which such enormous spaces were frequently developed, directly connected with the lumen of the tube by the numerous pits and sinuses referred to, as to more or less involve their entire circumference. Moreover, the sections likewise demonstrate that the material used in the manufacture of this tubing is exceedingly porous, and that the pores vary amazingly in size and shape. Again, pockets were often seen communicating with the inner surface of the tube, while, in several specimens, distinct channels were visible connecting similar pits or pockets with cavities in the substances of the rubber. It would, indeed, be difficult to imagine a more efficient arrangement for the propagation of germs.

By reflected light, under the microscope, the inner surfaces exhibit a view apparently made up of roughened and scraggy elevations and depressions with many openings and clefts, extending deeply into the texture. All the features of the imperfect seams, by this means, are easily discernible and can be readily traced and studied throughout their entire length. Therefore, it is obvious that any foreign material, gaining entrance to this perilous combination of pits, sinuses and porosities, cannot be removed by any of the ordinary methods of cleansing, however vigilant and faithful be the mother or nurse. Yes, it is extremely doubtful whether bacteria, when once lodged in these incubators, can be displaced or even destroyed by any known germicide or chemical.

From the bacteriologic examination of an infected rubber tubing, we were able to recognize a deposit of decomposing material coating the inner surface, being the thickest in those portions of the lumen in close proximity to the nipple and glass tubing. This debris was found, on further investigation, to consist of coagulated casein, with innumerable bacteria of varied morphology. The qualitative bacterial examination of the material demonstrated the bacillus acidi lactici to be the predominating organism. The staphylococcus pyogenes aureus and ouidium albicans, with three other distinct species, two of which belonged to the non-chromogenic bacilli, the third being a chromogenic micrococcus, were present, and in addition to several species not yet completely isolated.

Five decigrams of this grumous conglomeration, dissolved in 2 c.c. of sterile water and injected intraperitoneally into each of three full-grown guinea-pigs, weighing respectively 200, 254 and 261 grams, produced death of the animals in from forty-eight to sixty-one hours.

Segments of the infected rubber tubing were placed in small vials, and kept in an incubator at a temperature of 98.5 F., for twenty-one days, after the lapse of which time the specimens thus prepared were either in part softened or completely disintegrated, while, on the other hand, like pieces of the infected tubing, soaked for a few moments in a 5 per cent. solution of carbolic acid and subjected to the same temperature, were not similarly affected. The inference drawn from this experiment verifies the fact that the prolonged effect of decomposed milk on rubber will mash, mangle and disintegrate it.

In further unraveling the chain of morbid sequences, it was found, on a chemical analysis and investigation, that this process of decomposition and divulsion was due to the fermentation of the lactose of milk remaining in the tube.

An intimate part of the tubular mass consisted of zinc oxid as a filling which, in the cheaper grades, was considerable in amount. This component substance, under the influence of the bacillus acidi lactici, and probably some other bacteria, supplied one of the conditions favorable for the continuous production of lactic acid, while the other condition was the presence of stale milk in the lumen of the tube. . At the ordinary temperature, these micro-organisms decompose the lactose, giving an interchange of elements as follows:

$$C_{12}H_{22}O_{11}+H_2O=C_3H_6O_3.$$

However, a certain degree of acidity puts a stop to the growth of the bacteria and to the production of acid, but if the acid is neutralized, as formed by zinc oxid, as in this case, the decomposition is a continuous one. The casein was also more or less decomposed, which gave rise to bad-smelling products that remained in solution or else passed off in the form of gases. The presence of the zinc lactate, thus formed, which was soft and hygroscopic, coupled with the other soluble casein products, rendered the rubber doughy, indicating further injury dependent on micro-organisms.

In conclusion, I must insist that there are most rational grounds for believing that this mechanical invention, the long-tube nursing bottle, should be considered as a premeditated plan for the poisoning and killing of infants, demanding special treatment by law.

DISCUSSION.

Dr. F. P. Norbury, Jacksonville, Ill.—The ordinary nipple is open to many of the objections which are applicable to the long tube. In the average nipple that is molded, after being used for some time there will be a crease running the whole length of the nipple—on a line at which the two halves are united. This is to be seen by turning the nipple wrong side out. This becomes an excellent nidus for bacteria. I have seen, in consultation, several cases of poisoning resulting directly from the use of such nipples.

Dr. A. C. Cotton, Chicago—I would like to ask Dr. Wende whether he has made any microscopic examinations of the nipples as well as of the tubes.

Dr. Ernest Wende—The nipples are subject to the same objections as the tubes. However, they can be inverted and, thus, are more easily cleansed. It is customary to recommend that two nipples be employed, same to be kept in a solution of bicarbonate of soda, and used alternately. It may be too early to speak concerning the wisdom of this ordinance, yet the death-rate in the city of Buffalo was diminished just one-half, as compared with the year previous to the enactment of the said ordinance. Our statistics are based on the number of those who died from cholera infantum, for they demonstrate that the majority of deaths occurred among those who use the long feeding-tube.

THE SEMEOLOGY OF THE ATTITUDE AND MOTOR STATE IN CHILDREN.

BY SAMUEL W. KELLEY, M.D.
CLEVELAND, OHIO.

The ailing child tells us little in words. Under 2½ years he tells us nothing of his symptoms. Even in children who talk, sensations are likely to be unnoticed or ill described or wrongly referred. Therefore, when we examine an infant or young child, we expect nothing from subjective symptoms. This makes it the more important that objective symptoms be closely studied and correctly interpreted by the pediatrist.

I would not be understood as belittling the importance of learning the history of a case. I have no patience with the self-confident clinician who places so much reliance in his own learned touch and omniscient glance that he scorns to listen to the history of a case, but proceeds at once to divine a diagnosis.

Much may often be learned from the child's attendant: his name, age, sex, heredity, residence, surroundings—as to hygiene—feeding, previous illness or injuries, onset and duration of the present illness, previous treatment; also the health of brothers and sisters and the prevalence of disease in the neighborhood. Information on all these points should be elicited as completely as possible. But sometimes in hospital or dispensary practice in our great cosmopolitan cities the mother is not present, or she speaks in some outlandish tongue; and nearly always the mother's or nurse's powers of observation are quite limited, and when the patient is too young to have made articulate complaints at home, we get but a limited history of the illness. Thus we are compelled to fall back on the objective symptoms.

It is a time-honored and useful custom to feel the patient's pulse, and a matter of routine to inspect the tongue. Most practitioners perhaps make mental notes of his color and the state of his nutrition. I need not pause to enumerate the whole list of signals by which the organism attacked by disease appeals to us for help, nor is it necessary to precisely fix their relative value; but I wish to put the question: Do we take full advantage of all the objective symptoms and give to each the attention and the value which it should have?

Of all the objective symptoms of disease, I know of none so much watched and relied on by the doctor of to-day as the body temperature. Certainly temperature is an important symptom and well worth watching. But it is not the only figure in the group which makes the picture of disease; though I very much fear that in the view of many physicians the temperature looms up in the foreground so big that all else is either hidden or dwarfed by comparison. The secret of the popularity of this symptom is the clinical thermometer, and the ease of its use. If the stethoscope could recognize and record its findings it would be a much more popular instrument. If the sphygmograph is ever made as simple as the thermometer every doctor will carry one in his pocket and not even trouble himself to feel the pulse. The modern doctor is influenced by the spirit of the times and wishes to be scientifically accurate. It is easy by the aid of a mechanical device to ascertain the temperature with scientific accuracy. But unless the doctor is well trained, systematic and patient, that is about the only accurate observation of symptoms that he does make. I do not decry the use of the thermometer, but that the investigation stops there.

There are other symptoms of disease equally important, and in some cases more important, and equally trustworthy as guides to him who can read them aright. Among these are the attitude and motor state, which are almost inseparably associated.

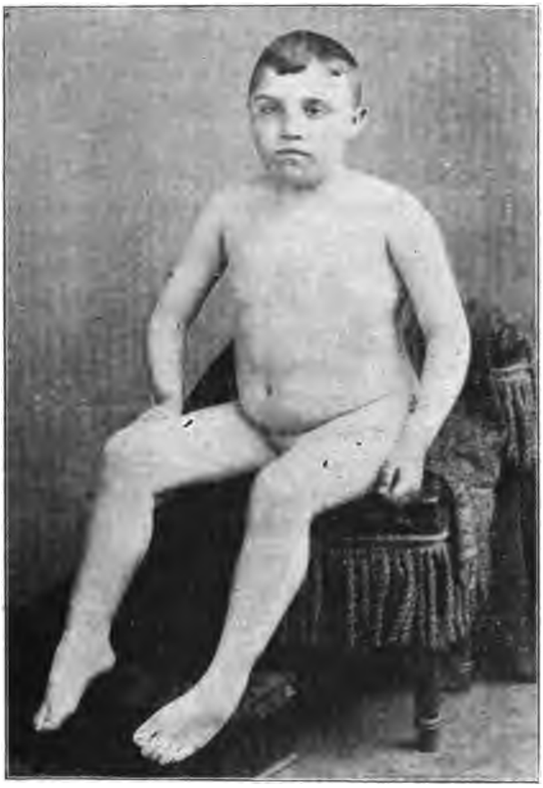

Figure 1.

I wish to formulate a few general principles and also some particulars which will, if true, illustrate the truth of my assertions on the value of these symptoms and draw attention to their importance.

The attitude and motor state are in general more reliable indices in the child than in the adult and in the infant than in the older child. The younger the young patient is, the less are the attitudes and motions dictated by fashion, altered by customary occupation, influenced by habit or affectation, or assumed with the intention of deceiving. They may be modified by bashfulness or fear.

The attitudes and motions of a well child are graceful and easy. If you will allow the expression, even his infantile awkwardness is graceful. Conversely an uncomfortable or restrained attitude or constrained or awkward movement indicates disease or injury. This does not locate the trouble, but should excite our attention and lead to closer scrutiny.

A well child is active while awake and rests quietly while asleep. Conversely, if the conditions are reversed, and the child becomes inactive while awake or restless during sleep something is wrong with him. Curiously enough, his less than normal activity in the waking state may pass unnoticed by the parents for some time, or be forgotten when one inquires into the history of the attack. But an uneasy night's sleep, during which the child tossed and turned and disturbed the mother or nurse, is not apt to pass unnoticed nor to be forgotten; and as Meigs and Pepper long ago pointed out, it may be the most certain symptom by which to fix the date of the onset of the disease. But this does not indicate the nature of the attack.

Constitutional diseases affect the entire motor state. Local diseases, excepting those of the nerve-centers affect motor states locally; or they may affect remote parts of the entire physique sympathetically or reflexly. When a local trouble begins to affect the general motor activity it has begun to affect the entire organism, and other constitutional symptoms will be found if searched for.

If you are called to see a child agitated by a general convulsion, you immediately run over in your mind the classification of convulsions and look for other symptoms which will enable you to determine whether it is idiopathic, symptomatic, sympathetic, toxic or thermic. On the other hand, if you find him in a state of general mus-

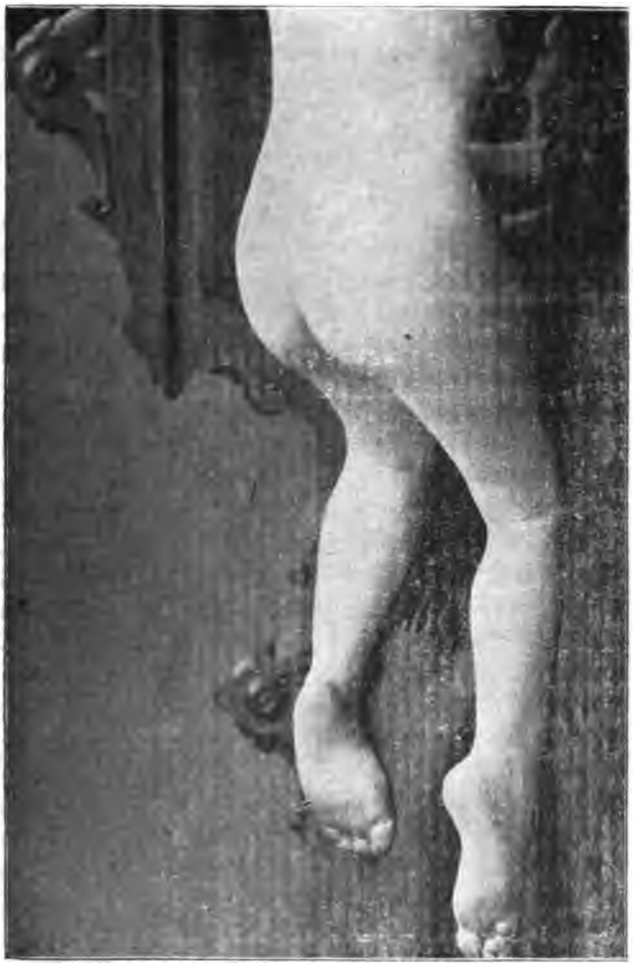

Figure 2.

cular relaxation you know that he has either brain disease or extreme prostration.

When we find that the patient insists on sitting up or reclining against high pillows, we at once suspect heart disease, although it might be asthma or pneumonia, or a double pleurisy with effusion, or even tonsillitis or bronchitis.

When a patient with high temperature and muscular and mental apathy resumes his muscular activity, you know that he is better otherwise. As temperature goes down temper comes up, and with it greater muscular activity. The little patient reaches for and plays with toys which before failed to attract his attention, or he seizes and throws them away, and reaches for something else or tries to go after it. He is better.

When a child which has been sick for some time begins to toss about on the bed, constantly changing position and at rest nowhere, it is a semeion of evil. In the eruptive fevers it may mean the onset of some complication. In croup or other disease of the respiratory tract it indicates very grave air-hunger. If there has been hemorrhage it shows extreme anemia. In all cases it heralds the approach of nervous exhaustion.

You are all familiar with the little sufferer from whooping-cough, and have seen him grasp his mother's clothing or chair or any object near, as soon as he felt the approach of a paroxysm of cough, and hold it fast until the paroxysm passed. Even in severe pneumonia of bronchitis the child does not execute this maneuver, and indeed, in that condition which clinically most resembles whooping-cough, viz., enlargement of the tracheobronchial glands, I have no recollection of ever seeing this apprehension of the approaching kink of coughing and preparation for it by running to a support. clinging and holding on. Have any of you observed this in any other disease than in whooping-cough?

If the child lies on the back and cries whenever touched or moved, one thinks of pleurisy, inflammatory rheumatism, peritonitis, scurvy, pseudoparalysis, extreme rickets, and it is more likely to be one of these than any lesion of the nervous system.

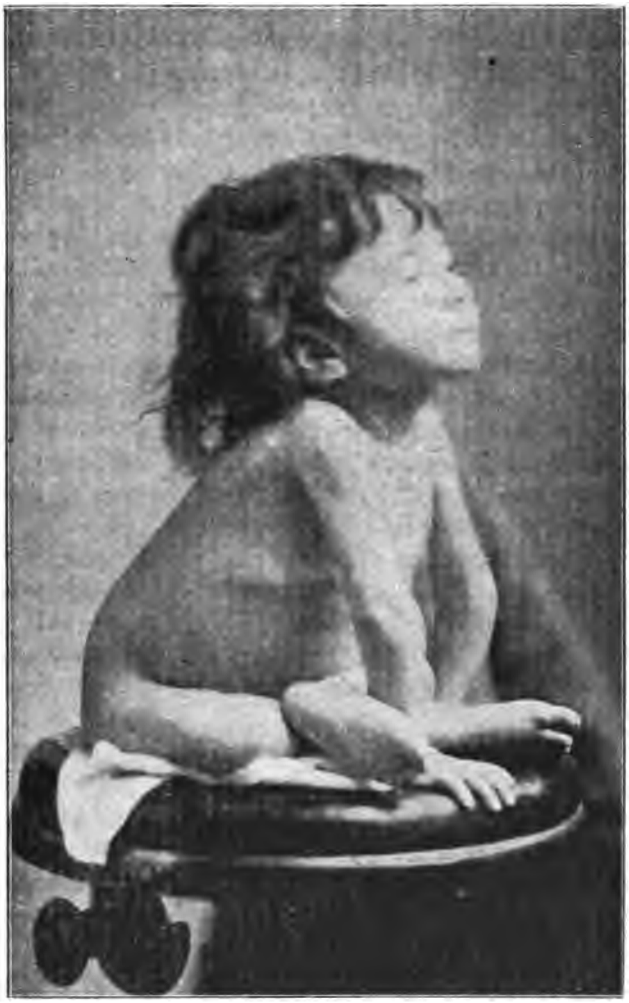

Figure 3.

In the child lying on his back with his legs drawn up we suspect peritonitis; but it might be a distended bladder, or hernia. If he draws up his legs to lash out again and twist and turn himself, he likely has irritation and pain, but not inflammation.

An attitude on the side, with the extremities in the position of the fetus *in utero*, but with the head retracted, is often seen in the late stages of tubercular meningitis or other intracranial inflammation.

If the child is lying on his face, or is kneeling with his face in the pillow or persistently toward the wall, we suspect inflammation of the eyes or of the brain or its membranes.

If the child persists in nursing from the breast or in lying only on one side, we look for pleurisy or pneumonia in the lowermost side. But if the pleura becomes distended with fluid, the child may turn and prefer the dorsal decubitus, though perhaps still turning the head toward the affected side.

When the patient with empyema, or on whom thoracotomy or resection has been performed, refuses to lie on the affected side it is because the drainage tube is too long or the dressing pads about it not properly placed, or the pillows are so arranged that the wound is drawn asunder.

The retracted head we are all familiar with as a symptom of meningitis, but it may accompany cerebellar tumor, diphtheria, pneumonia, or even typhoid fever.

With caries of the cervical spine and retropharyngeal abscess, also, there may be rigidity of the cervical muscles. The opposite of this—the head lolling forward on the breast, is seen in paralysis following diphtheria.

Opisthotonos in spinal meningitis or tetanus is well known, but one should bear in mind the possibility of strychnin poisoning. This reminds me that I have more than once seen an immovable lower jaw with high tension of all the muscles resulting from overdosing with nux vomica prescribed for the child as a tonic.

The locked jaw would compel one to consider trismus nascentium and tetanus.

The domain of nervous diseases proper is too large and too intricate for this paper, but I will venture on a few outlines.

It is not common to see in childhood hemiplegia with its lack of knee action and its dragging or circumduction of the lower extremities in walking. The high-stepper with locomotor ataxia is never a child; but the drunken reel or uncertain walk of cerebellar diseases may be seen in childhood. The shuffling walk and scurrying run of the idiot or imbecile child are recognizable on sight. We may find one or more extremities more or less useless, in fact paralyzed, and the questions arise: Is it due to some injury at birth or did it come after birth? Is it peripheral, spinal, or cerebral in origin?

The date of the beginning of the trouble, as given by the parents, is often fallacious; for they may have discovered nothing amiss till the child essayed standing or walking, when they suddenly noticed that something was wrong and imagined it came suddenly. If the paralyzed limb is flaccid the trouble is either peripheral or spinal. If it is spastic or rigid we expect to find other evidence of its cerebral origin. But a rigid muscle or set of muscles is not always due to nervous disease, neither local nor central, but is Nature's effort to immobilize inflamed tissues adjacent, or as we say, results from reflex action. Witness the board-like abdominal muscles in peritonitis and the muscular rigidity which cause the thigh and pelvis to move as one in morbus coxarius.

If a single arm appears paralyzed in a new-born infant, very likely it is a birth palsy; but before concluding that it is due to injury of a nerve alone, it is well to examine closely for fracture of a clavicle or separation of the upper epiphysis of the humerus, which may either simulate paralysis or be associated with it.

If an older child refuses to use his hand or forearm, and we find nothing wrong with them we may discover that his collar-bone is broken. Or he will not put his foot to the floor and after a while it is found that he has psoas abscess, pericecal inflammation, ureteral calculus or a hernia. As to the knee-jerks, it is easy to remember that they are diminished or absent in paralysis of spinal origin, for the spine presides over the reflexes, and is increased in those of cerebral origin; the brain can partly control the reflexes, unless it is impaired.

Speaking generally, the muscular movements elicited by electricity are unchanged in cerebral palsies; but show alteration in the spinal palsies, being diminished or lost in destructive disease of the cord, and increased if the cord is only irritated but not destroyed.

Paralysis of the side of the face at birth is due to pressure on the facial nerve, probably by the blade of the forceps; but facial paralysis in an older child is most likely caused by ear disease.

Fothergill likens the "duck-like walk" or waddle of pseudohypertrophic paralysis to the walk of the reel-foot or double talipes varus.

I present here photographs of a case of pseudohypertrophic paralysis so extensive and so extreme that the boy was scarcely capable of muscular exertion at all. As you see, he looks a very Hercules, but when lying prone he could not turn over without assistance; and he could not raise either hand as high as his mouth without using the other hand to elevate the elbow.

Allow me to remind you of the difficulty of distinguishing, in the infant, between paralysis and that which Fothergill called "the muscular listlessness of malnutrition;" and let me especially advise care in differentiating between true paralysis, the pseudoparalysis of scurvy, and the acute epiphysitis of hereditary syphilis. I have seen the pseudoparalysis of scurvy mistaken for acute poliomyelitis; and I have seen syphilitic epiphysitis mistaken for paralysis and for traumatic separation of the epiphysis. Certain complications can be extremely puzzling, for instance, arthritis following scarlatina without eruption, and accompanied with convulsions, in a child afflicted with scurvy.

Muscular as well as mental apathy, listlessness, or aversion to exercise characterizes the rachitic. As I see these little victims of rickets sitting about in the homes of the poor, in hospitals or infant asylums with their big abdomens and slim legs, and their solemn eyes winking seldom and slowly, they always remind me of toads. The illustration of one of these little "human toads" shows the resemblance. Such children dread to be handled or moved, and they move as seldom as possible, voluntarily. How sadly different from the buoyant, eager, ceaseless activity of healthy childhood!

I have not even mentioned the irregular movements of chorea, the movements of the alæ nasi and the accessory muscles of respiration, in laryngeal and pulmonary diseases; the attitude and motor state characterizing hip-joint disease and simulated hip-joint disease, of tetany, spinal caries and curvatures, the various fractures and dislocations, diseases and injuries of bones and joints, limp from strain or old fracture. Kernig's sign in meningitis, and a score of other symptoms diagnostic or pathognomonic will occur to you, and I hope suggest to one of you to write a good monograph on the subject. I may be wrong in some of my statements, and if so hope to be corrected. But I think enough has been said to demonstrate the importance of the subject for further study and for daily use in practice. I do not for a moment decry the use of all the modern instruments of precision and new methods of investigating disease; for I believe in and use them all; but I wish to draw your attention to the fact that there are methods always open to the physician's unaided powers, which he always has with him in country or in city, day or night; and that these lines of investigation are not only perfectly reliable, but can be advanced by further study.

DISCUSSION.

Dr. C. G. Slagle, Minneapolis, Minn.—My experience has been that diagnosis in diseases of children is the most difficult of all departments. We will never get old enough or experienced enough to prevent making mistakes in diagnosing these cases. This is particularly true of children under 2 years old, in whom our diagnosis must be largely based on objective signs. For instance, in typhoid fever and some forms of meningitis in young children, it is exceedingly easy to make mistakes in diagnosis. We have recently had, in Minneapolis, an epidemic of a peculiar form of disease that began in such a peculiar way that any physician would hesitate to decide whether the case was one of typhoid fever, with brain symptoms, or true meningitis. In a series of six such cases, coming under my observation, one proved to be true meningitis, and the others typhoid fever. While I was puzzling over these cases I happened to read an article by Dr. Louis Fischer of New York City, in which several cases were reported of what he called "meningitic typhoid fever." This description tallied exactly with that of our cases. When these meningitis symptoms passed away, the typhoid fever was apparent. This error in diagnosis may possibly be guarded against by the use of the Widal test, but I am discussing a paper restricted to clinical diagnosis. I have studied the subject of diagnosis very carefully, and presented it to this Section in a paper at Atlanta, Ga. There is one very striking thing, and that is the remarkable talent a few men possess for making diagnoses, notably Da Costa.

Dr. H. E. Garrison, Dixon, Ill.—This is, to my mind, an exceedingly interesting paper, because of its practical value. We practitioners in the country do not meet with many cases of severe sepsis, or with many complicated cases of germ disease, and can usually allow the germs to finish the war, but we do have numerous illnesses to treat, and we feel greatly helped, therefore, by a paper of this kind, which in condensed form gives us something practical in diagnosis. When it is published in the Journal I shall frequently refer to it for aid in classifying symptoms.

Dr. S. W. Kelley, Cleveland, Ohio—I wish to emphasize the point that we must not forget how to use our hands and our eyes, and how to interpret what we find, even though we may have many instruments of precision to assist us. I have a profound regard for the diagnostic skill and acumen of some of the old clinicians.

CONSTIPATION IN INFANTS.

BY H. M. McCLANAHAN, M.D.
OMAHA, NEB.

My remarks are limited to a consideration of this condition in infants from birth to the age of 6 months. Within the past two years I have had twelve babies in my care, suffering with constipation, and what I shall have to say is based largely on the study of these cases. The most important fact to be determined is the true cause, and each individual case requires special study. The causes in infants are entirely different from those that pertain to children and adults. Rickets is rare in children of this age, although a frequent cause in older children. Although carefully looked for, none of the manifestations of rickets were discovered in any of my twelve cases. Want of tone in the lower bowel, due to weakness of the muscular fiber, is probably a frequent predisposing cause; but seldom is it the sole cause. The real causes may be grouped under two heads: 1. the quality, quantity and method of feeding, and 2, the anatomic condition of the colon.

Under the first head nine of the twelve cases may fairly be classed; of these nine cases, seven were bottle-fed and two breast-fed babies; of the seven bottle-fed. three were fed on condensed milk, two on Mellin's food, with milk, and two on milk variously diluted. In all these cases it will be observed that they were receiving a food deficient in fat; in some the casein was in excess: in others, those on condensed milk, it was deficient. In the two breast-fed babies I made an analysis of the milk.

and the fat was about normal in both, and the casein greatly in excess. I think the important element in producing constipation was the lack of sufficient fats, and excess of casein. Of the remaining three cases the constipation began at birth, and persisted in spite of treatment for months; one was a bottle baby, the other two breast-fed; in none of them did the food, however modified, benefit in relieving the constipation; and in these three cases I believe the constipation was due to the anatomic condition of the colon. Prof. A. Jacobi, in 1869, pointed out this as a cause of constipation; even at this day almost no mention is made of it in our textbooks. The colon is normally longer in the infant than in the adult, and more loosely attached; in some cases there is no question but that owing to its length it doubles on itself, producing a reduplication of the folds of the bowel with closure of its lumen. This condition presents a mechanical obstruction to the onward movement of the fecal mass. Being a congenital condition, explains why these cases are not amenable to treatment. The diagnosis of this condition must be made by exclusion. In one of my cases, imperforate anus, or some arrested development of the bowel was suspected until a careful examination revealed the true condition.

TREATMENT.

In the first class the question of the diet is of the greatest importance; no arbitrary rule can be given; each case has its peculiarities, which must be studied. The percentage of fat should be increased, and the percentage of casein reduced. The character of the stools should be carefully noted; when light-colored and dry, the casein is to be decreased, and in some cases milk should be carefully peptonized. In two of my cases I found the addition of a teaspoonful of malt extract at each feeding a decided benefit. Correction of the diet however, will not always cure constipation, and a certain amount of drug treatment is necessary. My first choice is for the resin of podophyllin, given in alcohol in doses of from 1/40 to 1/24 of a grain. When the discharges are coated with mucus, phosphate of sodium is an excellent remedy, given in the form of a saturated solution. If a little orange juice is added to the dose when given, the child will take it more readily. When there is muscular debility as indicated by tympanitis and flabby muscles, strychnin and nitric acid are the best remedies. In these cases, massage, not only of the abdomen but of the entire body is of decided benefit.

In the second class neither food nor medicine is of much benefit; indeed, cathartics are not only harmful but dangerous. I wish to call attention to the digital examination of the rectum, not only as an aid to diagnosis, but as a method of treatment; with index finger oiled and inserted into the bowel, and gently pressed against the perineum, it is surprising how readily the entire pelvis can be explored; it is possible in this way to reach the sigmoid flexure, and to stimulate the peristaltic action of the bowel. I have no doubt that by gentle manipulation in this way, the folds of the colon can be straightened out. In each of the three cases I succeeded in getting a free movement of the bowel on several occasions. I therefore consider digital exploration of the rectum not only an important method of diagnosis, but a certain plan of treatment as well. In these cases injections should be used daily; as ordinarily given, however, but little benefit is derived from them. I have found a lisle thread catheter passed through a cork, the extremity of which is rounded, better than the soft catheter; this is attached to the rubber tube of the fountain syringe; the catheter is passed into the bowel, say two inches, and the cork surrounding it is pressed against the sphincter muscle; after the water begins to flow the catheter is to be gently pressed on up into the colon. The cork prevents escape of water, and the pressure of the water is sufficient to unfold the bowel. I have found from experience that this method of treatment will usually produce a free movement. Cases of this class require a continuous treatment for a series of several months; indeed, one of my cases was 10 months old before it could ever have been said to have had a free movement of the bowels.

DISCUSSION.

Dr. C. G. Slagle, Minneapolis, Minn.—This question of the treatment of constipation is one of very great importance to every one who practices medicine. I have had occasion lately to look up the subject of constipation in infants and young children, for use in a paper which I was preparing. I was surprised to find how many different causes of constipation were given in the literature; I had never appreciated before that there were so many factors entering into this subject. As the writer has suggested, some of the important factors are anatomical—for example, the length of the colon. The food undoubtedly is a large factor, but it is far from being the only one. I had not previously appreciated how frequently constipation occurred in infants nursing at the breast. Sometimes this is due to some defect in the mother's milk—as for instance some excess of proteids, or a lack of sugar. I have really had the most difficulty in relieving constipation in those infants under a year old who were nursing at the breast. We can manipulate the food more readily in bottle-fed infants, adding possibly oatmeal or something of the kind. Sometimes we can feed them a little sugar water. I have found that one element in infantile constipation is the dosing of infants with astringents, such as carminative teas. We know that these are all astringents, and that it is exceedingly common to give anise and fennel tea, or to dose the little ones with paregoric, or with castoria.

Dr. A. L. Lawrence, Washington, D. C.—Such an important subject as infantile constipation should receive full discussion in this Section. In infancy there is often constipation, alternating at times with diarrhea from an excess of proteids, as just stated. In these cases I have used small doses of essence of pepsin—ten or fifteen drops after nursing. One important point that might be mentioned in this connection is the value of massage, together with the use of oil-paper suppositories. By these means the mother can get the child in the habit of having an evacuation of the bowel at a certain time every day. When early infancy has been passed most children are fed almost exclusively on oatmeal and potatoes, and they very naturally become constipated. A lack of fat, especially in bottle-fed babies, is a cause of constipation. These children should be given more cream or butter. All forms of teas should be strictly prohibited. I hope there will be a very free discussion on this subject.

Dr. J. A. Work, Elkhart, Ind.—In connection with what has been said, I would say that I believe tight-lacing about the abdomen is another factor. We all know that in order to give nature a chance to produce a free action of the bowels we must not interfere with peristalsis—the muscular action of the circular fibers of the bowel. The tight bandages so commonly used on infants interfere with this peristalsis, and so give rise to constipation. I believe we should study more carefully the workings of nature. We are apt to want to do too much for her, and pay too little heed to what she can do without us.

Dr. E. D. Chesebro, Providence, R. I.—I wish to emphasize the statement made by the writer of the paper, that in the treatment of constipation, it is important to look after the quantity of fat in the food. It was pointed out some time ago by Dr. Holt that a certain amount of fat must be passed off in the feces in order to keep the later sufficiently soft. If the food is deficient in fat about all of it may be assimilated and but little or none left for elimination. It is my custom to look after this element, and if the baby is constipated I almost invariably increase the quantity of fat. Usually the results of such treatment are satisfactory. Excess of proteids undoubtedly has a great deal of influence, but lack of fat is a very important element in causing constipation.

Dr. Edwin Rosenthal, Philadelphia, Pa.—Professor Jacobi, when lecturing on constipation in children, exhibits the sigmoid flexure of a child, removed ten or fifteen years ago, which is eight or ten inches longer than in the average child. Dr. Jacobi gives this abnormal length of the sigmoid flexure as the cause of constipation in a great many children, and states that for this reason he prescribes the use of a clyster or enema, before giving medicine. He says that it may be from three to five years before such a child's sigmoid flexure becomes of proper length. In these cases it makes little difference whether the food contains high or low percentages of fat. We should, therefore, consider first the anatomy, and secondly the treatment.

Dr. Harriet E. Garrison, Dixon, Ill.—I wish to call attention to the fact that in nursing babies we are unable to modify the milk very much. If we give very much water it is passed off by the kidneys, leaving the bowel without much water; but if a little saline be added, such as bicarbonate of soda, elimination of the water takes place through the bowel instead of by the kidneys.

Dr. R. C. Moore, Omaha, Neb.—From the discussion of this paper it is very evident that most of the gentlemen here have experienced difficulty in treating constipation in infants. I might say that eight-tenths of the children whom we are called on to see are more or less constipated. Most of us have probably observed that most of these cases of constipation occur in bottle-fed infants. Furthermore, in examining the stools in these children, it will be found that they are not of the normal color; they are decidedly lighter than they should be. These facts should suggest the proper course to pursue. In the first place, if you can feed the child from the natural course, this is the best, but if this can not be done, a wet-nurse should be provided, if possible. If the means of the parents will not allow of this, we must content ourselves with artificial feeding, and must overcome the difference between the mother's milk and the food selected. The gentleman from Washington struck the keynote of this matter when he spoke of the absence of fat in our artificial foods. Old Dr. Meigs of Philadelphia, years ago, suggested the addition of cream to the artificial food, and this practice has proved very useful, and his food is still the standard for artificially-fed infants. He increased the fat in the milk by adding a certain proportion of cream. There is in mother's milk the natural stimulant to the different excretory and secretory organs of the body, and we can, in my experience, supply this artificially by one thing suggested by Dr. McClanahan, and that is by the use of orange juice. If constipated babies having white, lumpy discharges, are fed on orange juice they will be wonderfully benefited. The orange juice stimulates the natural secretion, and instead of the usual light-colored, bird-like discharges, there will be discharges of a natural color and of the proper consistency. In cod-liver oil, according to my experience, we have a most useful remedy in the treatment of infantile constipation. It will not only stimulate the excretory organs, but it will prove conducive to the proper growth and development of the child. Medication, in the way of cathartics, is useless, and, to my mind, injurious. Of course, if, when the baby is constipated, nervous symptoms develop, it becomes absolutely necessary to evacuate the bowel by the administration of a cathartic. At such times it is usually well to give castor-oil. In most instances, however, with careful preparation of the food and attention to the bowels, and the administration of orange juice, very little trouble will be experienced.

Dr. Leonard of Massachusetts—I never like to let an opportunity go by to speak about the feeding of children. About thirty years ago I came to the conclusion that the artificial feeding of children once in three hours was about correct; since then I have thought that three hours was rather too short a time, and that the food should be given in smaller quantity if as often as once in three hours. Attention to this point renders the movements from the bowels more natural, and prevents the evacuation of undigested food of all kinds. I am still of that opinion. I think it is time for us to cease medicating the infant and instead find out what the infant can digest, and the interval which will best suit its needs. Under no circumstances do I find it necessary to resort to any drug or use any mechanical means for the relief of constipation. It is exceedingly important that the food should be proper in character, and also very essential that it should be given regularly. A child will live on good cow's milk, or on milk of very different chemical composition.

THE IMPORTANCE OF A KNOWLEDGE OF THE DEVELOPMENT OR EVOLUTION OF THE CHILD IN THE PREVENTION OF CHILDREN'S DISEASES.

BY E. STUVER, M. Sc., M.D., Ph.D.
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In this age of world-encircling intellectual activity in which mind has penetrated so many of the secrets of Nature, and by directing its forces, has secured such a great dominion over matter, when the thought and discoveries of the whole world are at the command of each individual worker, we are prone to lose sight of the fact that while mind controls and directs matter, matter, on the other hand, exerts a powerful influence on the normal development and integrity of mind.

Surrounded as we are by free schools, almost universal educational facilities, and a public sentiment which, subordinating nearly everything else to the cultivation of intellect, rushes the child, scarcely out of the cradle, into the kindergarten, and thence through various grades of schools, colleges and universities, until he or she emerges at the age of 25 or 30 years, a finished product of our modern educational system, we are apt to forget that cultivation of the intellect or cramming the mind does not comprise the whole of development, and, that, unless very carefully guarded, by overlooking or ignoring the proper training and development of the body as well as the laws governing the development of the mind in the race, such training may do infinitely more harm than good

The child, instead of being "a little man," with the same thoughts, feelings, inclinations, capacities and powers, only on a smaller scale as a man, is, in truth, an altogether different being, and may be aptly characterized in his various stages of development as an epitome of the development of the race. He passes through the successive stages of savagery, barbarism and semicivilization before attaining to the full civilization in which we live. During this progress the spectral forms of his dead ancestors surround him on all sides, and the mighty mental accumulations and beliefs of a long-forgotten past impress on him the various stages of credulity, inquiry, faith and full-blown reason through which these ancestors have passed.

With these facts fully impressed on the mind, and thoroughly grasping the great truth that a symmetric development of all the powers—physical, intellectual, and moral—is necessary to the greatest happiness and welfare of the human being, let us see whether our habits of living, and educational methods, accord with these fundamental laws of development, and if not, in what way the physician can help to point out the remedy.

As before indicated, the child is not "a little man." In both organization and function there are great differences between the two, and hence their nature and training should be different, and made to conform to their organic and functional capacities. The glands, heart, lungs, muscular and osseous systems of the child possess a high degree of organic and functional perfection, and this would logically seem to indicate that the proper exercise and development of these various organs is the rational and proper occupation of the child during childhood and early youth.

In support of this inference it may be said that in the savage and barbarous stages of development of the race to which the young child corresponds, these organs and functions are developed to a high degree of perfection. Such things as weak flabby muscles, flat chests, failing hearts, and impaired digestive organs, were unknown, because their existence would have meant extinction to their possessors.

The muscular, osseous and respiratory systems were developed to a high degree of perfection, which was attained, not by disuse and confinement in illy-ventilated rooms for a considerable part of the day and the whole of the night, but by a careful and systematic exercise of the organs undergoing development but while the physical organization was systematically developed, and attained a high degree of perfection, and the special senses, especially the sight and hearing, were carefully trained from the earliest childhood until they became phenomenally acute among savage races, the intellectual development in many particulars remained in a rudimentary state. The powers of continuous mental application, abstract reasoning, and broad generalization were unknown to the savage, and were only acquired by the race through the slow, gradual process of evolution.

In support of the proposition that the young child represents and epitomizes the far-away savage stage of the race from which he sprang, we have the further fact that while the organic development and functional capacity of his heart, lungs, glandular organs and muscular and osseous systems have reached a high degree of perfection at birth, on the other hand his nervous system is in a very immature and undeveloped state. The brain of the young child, as compared with that of the adult, contains a larger percentage of water, is softer, more easily irritated, and is much sooner fatigued on mental exertion; but on the contrary the perceptive faculties, the development of which depends on the training of the special senses, are keen and alert, and attain a high degree of perfection if given an opportunity in childhood to develop in accordance with the laws impressed on the race by Nature throughout the ages.

With these principles clearly in mind, let us see what application can be made of them by the physician in warding off physical and mental ills, and helping the individual and the race to attain the highest physical, intellectual, and moral perfection and happiness.

When we consider the phylogenetic history which the child represents at the time of its birth, the long eons of time, and the enormous evolutionary progress through which it has already passed, we can have some appreciation of the force and wisdom of a remark once made by Dr. Oliver Wendell Holmes, that, in order to treat the child successfully, you ought to begin two hundred years before it was born. So strong are hereditary tendencies that, no matter how favorable the environment may be, they influence, either for weal or woe, the individual and his offspring for generations. This brings us to the first fundamental proposition, viz.: That in order to reach the highest development and the most complete living, the individual should be well born; that is, both parents at the time of procreation should be in good health, and free from all taint of tuberculosis, syphilis, carcinoma, or other hereditary or communicable diseases or constitutional predisposition to them. Then, during pregnancy the mother should obey the laws underlying good hygiene and correct living in the matters of proper clothing, diet, exercise, and the avoidance of all stimulants and narcotics, as well as late hours and undue emotional excitements which have a peculiarly pernicious influence on the rapidly developing fetus. One night of dissipation may cast a shadow over a thousand years of the phylogenetic history of the rapidly developing embryo.

After birth the infant should be nourished at the maternal font designed by Nature for its sustenance, and if the mother has been properly raised and cared for during pregnancy, she will in almost every instance have an abundance of milk, and it will be a rare thing, indeed, to be obliged to feed the child on cow's milk, or the many nostrum foods with which the market is flooded. Then, too, it should be zealously guarded against poisoning by stimulants and narcotics in any form. Opium and alcohol in all their varied forms, with their siren and delusive promises, should be forever banished from the nursery, and the child be given an opportunity to select its own drug habits in later years without having them forced on it at this early age. I want to make one suggestion here. As you all very well know, water is the great solvent on which the system depends to convey nutritive material to every cell and tissue of the body, as well as to remove their accumulated waste and broken-down products. These cells and tissues are surrounded by dialyzing membranes through which a constant endosmosis of nutrient material and an exosmosis of retrograde products are going on. An abundance of water is necessary at all ages, to keep these membranes in good working order, but especially is this true in infancy and childhood, when the assimilative and eliminative functions are so active. Often young infants cry from so-called colic, and are dosed with brandy, paregoric, or some such abominations, when they are suffering from thirst, and a few teaspoonfuls of cold water will relieve the difficulty, and they will fall into a peaceful sleep. All young children should have plenty of pure water at regular intervals.

The clothing should be made so as to give free movement to the limbs and permit a natural and unrestrained development of all the organs and functions of the body. The young child should have, at regular periods, an abundance of plain, unstimulating food, and plenty of exercise and spontaneous play in the fresh air, and should at an early age be trained to habits of regularity in attending to the functions of the body.

As childhood is the time of active development, and as sleep is Nature's great upbuilder and restorer, children should have an abundance of sleep during all these years, and especially while attending school. All stimulants and excitements, such as late hours, children's parties, and the many artificialties of our so-called advanced civilization, which tend to bring about a premature maturity, should be strictly avoided. During childhood, when their perceptive faculties, memory and imagination are active, they should be brought in close contact with mother Nature, from whom they will gain far more physical strength, mental power and wisdom than can be obtained from the formal methods and conventionalities of most of our schools. I desire here to enter a protest against the long hours, continuous mental strain, cramming methods, and forcing processes of most of our modern schools. Scarcely is the child out of the cradle before it is sent to a kindergarten school; here, if it is so fortunate as to have a teacher who understands and is thoroughly imbued with the true spirit of Froebel's teaching, it passes a happy time, and receives much benefit. The child's books are plants, flowers, trees, fruits, birds, insects, and the various objects, animate and inanimate, of the external world by which it is surrounded. The everlasting hills rising in majesty and grandeur, the soughing of the wind among the trees, the murmur of the brooks, the glorious sunsets, the autumn forest with all its gorgeous hues and kaleidoscopic changes, in short, the almost infinite variety of objects and the innumerable beauties of Nature can be made most impressive sermons by the true kindergarten teacher—sermons which will sink deep down into the soul of the child and leave an impression on its body, its mind and its character which the storms and vicissitudes of life will never obliterate. But, alas! such teachers as we have in mind are like angel's visits—rare, indeed— and come to us like a ray of hope from the great beyond.

In the majority of instances even the life of the kindergarten is smothered by the blighting curse of formalism, and instead of being a blessing it is made a curse, and through ignorance or disregard of the most rudimentary physiologic laws lays the foundation of physical defect or disease. But if this is true of the kindergarten, what shall be said of the average primary school? In the words of Dante, there should be inscribed over the portal: "He who enters here leaves hope behind," because from my observation and information about our schools, from the time the pupil enters the first primary grade until he completes the grammar school course, he is continually subjected to such a grind and cramming for examinations that he must indeed be made of stern stuff if he does not emerge from this course weakened both in body and mind. The object of all true education should be a well-rounded symmetric development of all the powers, physical, intellectual and moral, of the individual; but in the face of this truth, which is acknowledged by all educators worthy of the name, we see children from 6 to 15 years of age, during the time of intense developmental activity, subjected to a course of study which, in many instances, is entirely beyond their comprehension, and a source of constant irritation to their immature and unstable brains.

Especially to be deprecated is the everlasting number work and arithmetic drill, which appears to have become a mania with the larger part of the teachers in our schools to-day. From the time the unfortunate child enters the first primary, through the eight long years until he emerges from the grammar course, he is subjected to a continual grind in number work, problems and examinations; morning, noon and night they are a veritable "old man of the sea" to them, hanging like a pall over their hours of leisure, and, even invading their dreams, they have become not only a menace to the health and happiness of the children, but also a nuisance to their parents, who can not enjoy a quiet half hour because a puzzled child can not solve a long list of problems far beyond its comprehension, and appeals for help. But, after all, what results are attained from all this work, worry and grind? I believe I am justified in saying that they are nearly always inadequate, and often a dismal failure, and that any 11 or 12-year-old pupil who had never looked into a written arithmetic, but who had been carefully drilled in mental arithmetic, can do better work and obtain a clearer comprehension and more thorough grasp of the subject in three or four years than the struggling child obtains by its eight years of arduous and detestable toil.

Then, too, the system of examinations in vogue in so many schools is a veritable *bete noir* to the pupils, who are kept in a constant state of worry and irritation, and subjected to a continuous nervous strain. The work, instead of being inspired and vitalized by a love for truth, and a desire to penetrate and understand the secrets and laws of Nature, becomes a mere mechanical cram and filling-up process to pass the examinations. This sort of work, as every one knows, has not only little real educative value, but by leading to makeshifts and subterfuges of various kinds, as well as downright cheating, degrades the pupil. Healthy mental and physical growth and activity are conditioned on an enjoyment or appreciation of the work being done. A distasteful task, or one done under compulsion, fatigues the mind much sooner, and leaves a much more evanescent impression than one which arouses the pupil's enthusiasm and engrosses his whole attention.

When the teacher so directs the pupil as to call his physical and mental powers into play, spontaneously, the dry rot of formalism and routine vanishes as if by magic, from the school, and instead of the tired, disgusted look on so many young faces, produced by the mechanical leveling process, which by confining within restricted bounds, reduces all to the same plane of mediocricity, we see the flashing eye, the eager intent purpose, and the whole soul of the pupil aroused by a noble enthusiasm. Who will say that in true educative value, one hour of such work is not worth weeks, nay months, of spiritless cramming.

Nor are spontaneity and interest less important in physical than in mental work. Free, unrestrained, spontaneous play in the open air is of infinitely greater value in developing the body than any indoor formal exercise, although, properly directed, gymnastic exercises, if subordinated to outdoor sports, can be made valuable adjuncts.

So many pitfalls and dangers lie hidden in the pathway of the rapidly evolving child that in order to guide him wisely and safely through the intricate labyrinth, to avoid the Scylla of physical ills, on the one side, and the Charybdis of mental evils and abnormalities on the other, it is necessary that the physician should at least have a clear outline knowledge of his evolution, and know something of the physical and mental characteristics and potentialities impressed on him throughout the ages.

INFANTILE DISEASES FROM THE STANDPOINT OF BIOLOGY.

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Professor Von Virchow, in "the Huxley Lecture" delivered before the British Medical Association, Oct. 3, 1898, gave utterance to the following statement, pregnant with meaning to the thoughtful physician: " . . . An indispensable foundation for practical work, and particularly for medical practice, is to construct an objective picture of the nature of vital processes." And further: "The local action of cells must determine the practice of physicians and surgeons." This suggests the true ground to occupy in the battle we are called to wage with disease. And before attempting to construct this picture, permit me to fortify and strengthen the dynamics of Virchow's suggestion by a statement, equally pregnant, made by Prof. Lionel S. Beale. In his latest work, "Vitality," published less than a year ago, he says: "Healing processes can take place only through the agency of the living matter." That is, the bioplasm. If this be so, then biology is the foundation of therapeutics. Previous to this, two years ago, Professor Beale had said: "Every pathologic change is consequent upon a vital action." Again, if this is so, biology is the foundation of pathology. This, then, is in illustration and support of the title of my paper.

That we may understand the nature of disease, that we may comprehend its phenomena and know the mysteries of its cause, we must look within; we must enter the vital domain, study the normal activities of life and see the workings of the life processes in their inception and progress. The wonderful fertility of modern ingenuity, in the invention of microscopic and other aids, enables us to do this. The use of these "instruments of precision," in the hands of skilled and careful bacteriologists, makes us absolutely certain of the presence and active agency of the bacteria in the morbid conditions prevailing in disease. But there is also needed the use of that grander and more important instrument, the trained mind of the biologist, the physician himself, to determine the true status and place and part played by the cause, in disease.

Where is the site, locality, ground on which is enacted the drama of disease? Part of it is on the surface of the skin, in the irruption of smallpox and measles, of which we have seen so much recently. Part of it is in the lungs, and in the glands of the lymphatics, where the tubercle multiplies in phthisis, and where lives and thrives the bacillus tuberculosis. Part of it, again, is in the intestinal tube, as in Asiatic cholera, and where, too, live and thrive the bacilli. Macroscopically and microscopically we know this, but we must bring into play our own finer instrument, the logical mind, back of our seeing, or we shall find ourselves "at sea" in what we see, and in what we think we know we shall surely be in error.

To make broad and firm the platform on which we stand in our survey of this interesting part of medical science, I wish to introduce a few salient points as landmarks.

The indefatigable spirit of modern inquiry and research has resulted in establishing that vitality is the basis of all life and growth—vitality, not chemistry.

The latter has its own important part to play, but back of the chemic phenomenon, and making use of it, is the vital force activity, of which the cell is the unit (?) and depository. And here, in the infinitesimally small point of bioplasm, or living matter, so minute that a human brain has been estimated to contain three hundred millions of them, five millions of which die and are replaced by new ones each day, there is in dynamo the potency of life. The living, vitalizing force animating each cell is the bioplasm, which Beale thinks is not more than 1-100,000 of an inch in diameter, 90 per cent. of this being water, and all vital power is associated with this living matter.

The lowest exhibition of vital activity is in multiplication and growth. The manifestation of vitality is different in the various cells, but all is subservient to one general end or design. The death of the bioplasm is going on constantly from the inception of life, and its powers are transmitted and transferred to other living matter which comes into existence at the moment of the parent bioplasm's death.

The new bioplasm or living matter was evolved out of the nutrient substance just taken up and into the body of the parent bioplasm, all its powers being at the instant of death transferred to, and now possessed by, the new living matter just entering on its brief career of life. The nutrient substance is in solution, circulating in the interstitial fluids of the tissues, and is taken up by the living matter with which it comes in contact. The maintenance of the normal condition of the various organs and tissues depends on the free circulation of these interstitial fluids, and the taking up and vitalization of the nutrient matters within them.

The vital phenomena then, occurring in the passing of the nutrient matter into the substance of the living matter, and the transfer of life, with all its powers, of the bioplasm now to "die," part of itself being converted into formed tissue of a kind determined by its own nature, or the powers it inherently possessed—this is the essential phenomena of life. Here we enter the arena of those vital and chemic activities which constitute life and growth, and here, too, we stand on the ground and in the presence of the equally vital phenomena we call disease and its cure, or return to health.

This wonderful vital activity represents the constant and incessant life processes going on in the human body: from death to life, issuing in formation, differentiation, growth, with the functions catabolic and anabolic associated.

Think a moment of the process of life as it goes on in the fetal organization. The hand evolves from a particle of bioplasm. The palm does not develop first, then thumb, then fingers, one after the other, but altogether, simultaneously. The bones are not completed first, then periosteum to cover them, then muscles, fascia, skin, but all and every part together. So of the whole body. A single germ, a bioplasmic seed, having in itself the power and potency of life—and life in this various and multitudinous form—an infinitesimal point of living matter, which has in itself that unlimited power, in the exercise of which it selects and attracts from the elements which constitute the cosmos, of which all things are a part, and taking them up singly or combined as needed, and utilizing the chemic and other forces in constant association with them, it weaves and forms the various tissues and parts: endowing this cell with power for a single and simple purpose to accomplish, and another with a multiform and intricate and complicated design to fulfil, and all harmoniously working, this in structure issuing in formation of bone, that of connective tissue, still another of nerve substance and fiber, others of cellular tissue, epithelium, etc., until from the particle and sperm and ovum, there develops gracefully and symmetrically, with infinite design and masterly accomplishment, the bounding perfect organism.

This ceaseless vital activity is, as we have seen, multifarious and complicated. For the perfect fulfilment of these, which are necessary to, and result in, health and normality, how much is needed and involved. Normal, perfect bioplasm in solution, 90 per cent. water, and provision for an almost infinite number, and, as a matter of vital importance, an absolutely *unbroken succession of these throughout the entire life of the organism.* Interference here, a break in this succession, is irremediable. A crawfish may reproduce its claw after amputation (Beale), but not so man, if he lose a finger, an eye, a gland or any part. Break the succession of the bioplasmic nucleus and it is broken forever, for that grade; a lower grade of formed tissue, cicatricial, is the nearest approach to what was normal there, but lost, that is ever produced. (As a side remark, permit me to suggest: Do not try to locate a bullet in the brain by the use of a probe; use the X-ray; you will surely increase the destruction of vital tissue, and make wider the irreparable breach with its resulting paralyses, or epilepsy, etc. A wound involving merely formed tissue may be completely remedied by production of tissue of the same grade, but not so if vital tissue or bioplasm is destroyed. As we said, a break or interference in the bioplasmic nucleus is a breach irremediable and eternal.) Besides normal bioplasm in unbroken succession, there must be free and unimpeded circulation in the interstices of the tissue substance of fluids: normal nerve action, probably dependent on changes in the nerve-fiber, brought about by the vital activity of the bioplasm—all this, and much more, is essential to that unique condition we term health and normality. The slightest "hitch" in this train of conditions and events, the least interference with the operation of these invariable laws of life, means ill-health, and if prolonged, disease. With this very imperfect "objective picture of the nature of the vital processes," we can more readily see and understand both the nature and cause of disease. This puts it where it belongs, within, in the cells, in the bioplasm of the cells.

In making use of this in elucidation of the problem of infantile diseases, permit me to do it this way: I sometimes have curiosity to look over the city record of deaths for the week, and find it something like this: Name, ——, age, 31; cause of death, tuberculosis. Name, infant, age 2 days; cause of death, inanition. Farther on down the list I read again: Name, infant, age 12 hours; cause of death, inanition. Reflecting, I say to myself, "inanition." What is the nature of its phenomena? Where its field of operation? I construct an "objective picture of the vital processes," as suggested by Virchow, and I see them in active operation, as I think they are. The natural elements of which all things consist, in their various combinations with the affinity of the inferior for the chief class, are in play. I see the simple element phosphorus combining with the greater, central one, oxygen. I watch the "combination" which takes place. I perceive the heat that is generated: flashes of electric force, and currents of electric and other power start into activity within the nucleus of the tissue cells, and they move, they throb, they divide, they multiply, sending out prolongations and extensions; they weave and form tissue of various kinds. The bioplasmic nucleus dies, passing on its life and powers to its successor, the part of itself not converted into formed tissue being taken up by the oxygen carriers, to be eliminated as waste—all this I see and more.

But while still observing, the vital process flags, slacks down; electric flashes die out; currents of vital force move sluggishly and still more slowly. The life of the dying bioplasm goes out without successor to take up its powers and to carry on its activities, and in how brief a period: "twelve hours;" "two days," the record said. The "objective picture" passes out of view, and naught remains but a motionless, lifeless mass of heterogeneous matter, and there is written over the untimely "abortion," if we may so call it, as explanatory of the unnatural phenomena, "inanition."

Laying aside the microscope and looking macroscopically, we ask, what is the philosophy of the phenomenon under consideration? A panorama of happenings rushes past, but the most vivid impression left on the mind is this: When the babe emerged into life, the vital processes enacted *in utero* began adjusting themselves to the new environments, during which process, infinitely delicate as it must be, did the nurse or the doctor carelessly and unnecessarily expose the surface of the body with its delicate covering of skin, having myriads of passages for egress and ingress, and its complicated nerve arrangements providing for the regulation of the heat and electric and nerve and other chemic forces being generated in the interior of those vitally active cells? What a frightful derangement, what a tremendous revulsion of those vital processes might almost instantly result, simply from such a chilling of the surface as we have supposed, in a babe whose vital endowments were but feeble to begin with. And if the vital processes have their initiation in oxidation, as we know they do, and if deficient oxidation results in lowered vitality, and consequent imperfect elaborations of tissue, as seen in the tubercle in phthisis and the enlarged glands of struma, who can estimate the effect of those antenatal and postnatal influences and happenings which we have merely hinted at, in the production of that soil or diathesis, without which, notwithstanding the fact of the bacillus, or other bacteria, we can not have some diseases?

Surveying the field of pathologic phenomena from the standpoint of biology, we see that disease is vital phenomena equally with that of normality and health. The recognition of this fact will go a long way toward clarifying our ideas in regard to the nature and causes of disease. In my work at the college dispensary I see many infants and children. The diseases prevailing in the colored race are of a strumous nature, largely. Only recently I opened an abscess in such a child; the quantity of pus was enormous. Now, what is scrofula, viewed biologically? Much the same as tuberculosis. This is accepted generally by the profession to-day. Here a question arises: Why, then, are no tubercles found in the strumous phase of the disease? We say, "I don't know;" how will this do as a hypothesis in explanation?

In our landmarks, we said, the lowest exhibition of vital activity is in multiplication and growth. The higher manifestation of this is in formation of the more complicated and elaborated tissue, and in transference of powers of succession and design and elaboration of these to completion. There may be interference with the biologic processes affecting and preventing the elaboration of the higher and more complicated structures, which may not interfere with the exhibition of vitality as seen in simple multiplication of cells. There may even be stimulation and increase of power and activity in the multiplication of pus corpuscles, as in abscess formation. The bioplasm may live too fast under the stimulus of disease conditions, as well as too slow under abnormal yet different environment. In the glandular enlargement of struma we have elaboration of tissue of a lower grade than tubercle, perhaps, at least a different grade and probably less enduring.

This opens up a wide field of thought and inquiry. Certain it is that disease, in its nature and phenomena, in its cause and process, arises and is enacted within. Some phases of disease we specify as "cellular." Is not all disease cellular in that its phenomena is enacted in the cells and radiates from them? To be sure the cause of disease may be from without. The philosophy of the cause in disease is very interesting as a study. There are many "causes," but perhaps two general classes, one from without—that is impurity, dirt, irritation, bacteria—the other from within, in the *materies morbi*, not from without but generated within: toxin, virus, the product of pathologic vital activity, which is the result of the "cause," whether that enter from without or arises *de novo* and within.

The cause of disease, whatever it be, does not always determine the nature of the complaint that follows. Two persons are exposed to the damp air, sitting in a draft, one will have an attack of influenza, the other will groan with pains of rheumatism. The disease following the cause is determined by the action, the response of the cells, in their vital phenomena, to the irritant or cause. Diathesis, soil heredity, comes in here and plays an active part. If one of the two persons supposedly exposed to disease-producing environments were an Englishman of the well-to-do class, whose ancestors were high livers, his rheumatism would be of gouty type, in all probability.

The cause of disease is a fruitful topic of investigation and reflection. I think bacteriology is carrying us a little too far, and the use of the microscope, important and essential as it is, will mislead us if we neglect the constant use of our own "instrument of precision" in these investigations. Virchow advocated the cardinal importance of distinguishing between the cause of disease and its essential nature, maintaining that bacteria are never more than the cause, the disease itself depending on the behavior of the organs and tissues themselves with which the bacteria or their metabolic products come in contact. And here permit me to say that while I hesitate not to accept the statement, the dicta, of this eminent man, this prince of pathologists, with the toil and research of half a century as his record, yet I must confess I am hardly prepared to accept the legitimacy of these metabolic products, as the progeny of the bacteria. I have more than once expressed my doubt of the soundness of the theory, that these toxins, capable of acting chemically on the albumin of the blood-corpuscles, are the product of an animal so low down in the scale of physiologic being as a bacillus. Could a physiology so simple elaborate so complicated a product as the virus or toxin is found to be?

I think we may accept the dicta that disease is abnormal vital activity, and the cause may be from without or may independently arise within; that the cause does not necessarily determine the nature of the disease, but the response of the vital activities to the contact relation of the irritant or cause, whatever it be. The same principle is operative in therapeutics. Drugs and medicines do not cure disease. There is no active principle in drugs; the active principle is in the vital force energies of the organs and tissues, strictly speaking, in the bioplasm of the tissue cells. The drug is necessary; it is the "cause" of the vital therapeutic and restorative process; but the return to health, the healing process, the therapeutic phenomena arises from within, in the bioplasm of the cells, set into vital therapeutic activity, it may be, by the contact relation of the medicine. It would require another paper, several of them, in fact, to cover the ground embraced in the title.

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DYNAMICS OF SCHOOL PUBERTY.*

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Dynamics, according to Webster, are "the moral as well as the physical forces, and the laws which relate to them," hence dynamic pubetry in city children, for of country children I know but little. My whole life has been a city life; my practice largely with city children, and I have come to know only too well some of the penalties which they pay for their urban existence, especially about the time of puberty; so much so that I have come to dread the time of their blossoming into manhood or womanhood under our present school system. It should be, for the child's highest possibilities a time of sunshine, singing birds and spiritual bloom.

What is the actual condition of the average city child especially the girl, at this time. Haven't most of us in mind more than one case where one year ago the girl had the normal appetite, the bright eyes, the verve and go of the typical American child? Since then she has entered the high school, and day by day has been losing ground. Her appetite, except for pickles and coffee, has gone. She was once a tomboy, and now complains that it tires her to comb her hair. Her rosy cheeks have disappeared; her lips are anemic, her ear-tips translucent; menstruation is scanty; the pulse intermittent, and you may find an anemic bruit on ausculation.

But why should I enumerate her symptoms? You know them as well as I. This is what I wish to ask: Is it necessary that this girl's blossoming should be purchased at such a price as this? Topsy in the southern cotton field knows nothing of these penalties, even though she performs hard labor when in the "dark of the moon." What makes the difference? It is not far to seek: Topsy "just grows," while the Chicago girl is educated according to the edicts of a board of education selected by an elective mayor; need I say more?

At present the alternative for the city girl seems to lie between culture, with the ills of abnormal menstruation, or to be cultureless and in joyful ignorance of menstrual pangs and her Latin parts.

In physiologic dynamics we have learned that every mental effort produces a characteristic fatigue curve on a recording drum; crowd effort still further, and it passes into a fatigue irritability with characteristic and unmistakable record on the recording drum.

"In the stupid old times," says Charles Kingsley, "children were taught to know a few things and know them well, but in these enlightened times they are taught to know a little about everything and to know it all ill, which is a great deal easier and pleasanter, and therefore quite right"—or to put it in electric nomenclature, our children are human dynamos with certain potential voltage for each one, which voltage can not be increased by multiplying the switches, or attaching more incandescent lamps. Every additional study is an attempt to attach another lamp on the child's intellectual circuit. Small wonder that a girl's dynamo, which always runs at a higher rate of speed than her brother's, begins to splutter somewhere along the line. *Propter uterum est mulier,* hence sexual irritability, religious vagaries and the sexual perversities of overcivilization.

Who is to blame for these things? Chiefly we as physicians, unless we at every convenient opportunity, and at some inconvenient ones as well, have taken occasion to make known that the time of sexual awakening is one of peculiar temptations and stress for the modern girl. We lay heavier burdens on her shoulders than she can safely bear, and then complain because she came out a morbid and bad-tempered apology for a sound, normal woman.

The boy does not generally fare so badly physically, for the wires on his circuit are usually of coarser make, and his studies are usually more of a burden to his teacher than to himself. He suffers chiefly from bad air of the school room, the cigarette and the moral atmosphere by which he finds himself surrounded. As a rule he has plenty and more than plenty of good food, but he matures in an unhealthy atmosphere, chemically and morally, since in every great city there is a cumulative increase of refuse in the air, in the street, even in the home. A saving grace of athletics may counteract for the boy some of these forces, but as President Elliott of Harvard truthfully says, it is absolutely impossible to preserve in health any family that resides uninterruptedly for two generations in a great city.

Now add to this subnormal condition of physical health, the stupidity of our ordinary public school teachers in selecting the educational burdens which they hope to bind on the shoulders of all the students in their "grade," and you have a condition of affairs which cries to Heaven for remedy—not in vain, I believe, if the members of this Section in season and out of season protest vigorously against what Mrs. General Lew Wallace rightly calls the "Slaughter of the Innocents." Perhaps the physical side of the question needs no more repetition to this Section, but just a word as to its psychology —a subject sadly neglected in all our medical colleges.

On this head let me quote from my master, Professor George A. Coe, to whom here I wish to make grateful acknowledgement for original work along this line: "Who of us," says he, "stops to think that puberty is the time of intellectual and religious flowering no less than physical?" "The years from 14 to 17 are especially those of hesitating, introspective conscience and intellectual thirst for the absolute"—facts to which little or no heed is given in our present system of education. These are the years of the establishment and regulation of puberty as well, and I am profoundly convinced that either process of development, the mental or the physical, and still more both, since they occur conjointly, require the most careful regulation of the youth's life at that time."

Has it ever dawned on the average city school teacher that such pupils are liable to serious physical and spiritual injuries arising from the mental and spiritual vagaries incident to the sexual adjustment of their lives? The average grade-teacher of our progressive city schools concerns herself with little that lies not in her grade. The one essential fact that is daily impressed on her pupils is that at any cost they must "pass" on final examinations, or be everlastingly disgraced. It may be, and generally is, true that these examinations consist of memorized repetitions of facts that are of no possible use in the future life of the child. There has been no intelligent effort on the part of the teacher to teach the child to think; to educate, to draw out and develop its budding powers. The process in the average public school is not education, but *farcement,* to borrow an old English word—a stuffing of undigested facts into unhealthy children, after the fashion of the geese of Strasburg. What I wish to insist on in this paper is that the modern method of public school education during the establishment of puberty is most hurtful to the future sexual and psychic health of the child. To quote again from Prof. Coe: "It is folly and worse than folly to assume maturity where maturity does not and can not yet exist. The result is over-taxation, worry, despondency, morbid conscience, bad temper and heightened liability to sexual temptation." All these things we know and have seen, and yet we keep silence because it is the fashion to bear them."

But all this, perhaps you say, is destructive criticism, which is vastly easier than to offer a better way. Granted!. But, on the other hand, we shall never seek improvement until we grow dissatisfied with present methods; and if we can formulate just reasons for dissatisfaction our time has not been misspent.

Here then is our charge in the case of Puberty vs. the City Public School System, viz., The maturing child, for its perfection, needs active exercise, pure air and sufficient food. The present public school requires that pupils, irrespective of their physical condition, maintain an unnatural condition of quiet, in an unphysiologic posture for many hours each day. Add to this poor ventilation, oftener none or worse, and it is small wonder that the child grows listless, loses its appetite and gives proof of nerve tire on the proper physiologic testing. Moreover, many of these pupils, especially girls, attempt to take instruction in music at this time. Some time, I presume, the physiologists will explain to us why the study of music, especially in its earlier monotonous exercises, is so exhaustive of nerve force. But whether we understand or not the why and wherefore, the fact remains that a large percentage of menstrual irregularities occur in young girls endeavoring to become musicians in addition to their regular school work. The humble potato will sprout and send up long waxy stems, and attempt to blossom in a sickly, ineffectual way even in a cellar. Such is the menstrual life of the city girl, if she strive for place or position, and music is a brick—if you care to carry the comparison further—laid on the flower of menstruation. Hence, from the standpoint of one who loves his race, I dread the city music teacher, and hate the musical college if its work is taken in addition to forced school work.

Fellow judges, on the bench assembled, if it be true that our city school takes from its pupils the air, appetite and vital force necessary to properly establish the functions on which the perpetuation of the race depends, then our city inhabitants are making a costly exchange, in spite of the gain in wider culture and information.

Culture, let us remember, originally meant the preparation of the earth for crops, hence Bacon speaks of the "culture and manurement of minds in youth." Manurement, certainly, our boys get in our public schools, but what of the crop? It has come to pass that in these latter days we build and endow agricultural colleges in order that our farmers may better know what sort of manure to use in their wheat fields, but any crude normal school graduate may, unquestioned, "spread her compost on the weeds of our children's minds to make them ranker." Herein is folly. A sound, well child is the best crop of the state. No price is too high, no care too great which insures such results. Are you satisfied with the harvest that is being garnered from our present public school methods? Is the average high school girl a pleasing commentary on the nineteenth century civilization? Our city boys and girls have disappeared, and in their stead we have raised a crop of self-conscious, short-sighted, round-shouldered, stunted, disagreeable prigs, who despise their parents and betters, and think that knowledge shall die with them. I am heart-sick for the old-fashioned, dirty, idle, vital girl and boy who knew intimately the joys of sunshine, field, flower, brook and bird, and—thank God—nothing of Miss Harrison's esoteric significance of bread and molasses.

In behalf of the state I call for an injunction against the present boards of education, which are sacrificing our children to our alleged civilization. It makes modern culture no less a Moloch to spell it with a large C and deck it with the flowers of our eloquence. The old brazen idol did its work quickly with the children laid in its arms, while the priests drowned their cries with timbrels and shoutings. We call our modern Moloch "Culture," and it shrivels and dwarfs the souls and bodies of our children while we shout to them the names of their cerebral convolutions, and cut ourselves with the knives of our self-conceit. The Assyrian Moloch had the head of an ox; the American Moloch has the head of that humbler animal which in the fable of Esop was carried by the old man and his two sons as a result of their supercivilization.

HYSTERIA IN CHILDREN.

BY EDWARD E. MAYER, A.M., M.D.
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Hysteria in children was first described by Ranvlin, in 1748. Before him, in 1681, Lepois had ventured to combat Hipprocrates' view that it was a uterine disorder, and heretofore only a female complaint, but he had not gone beyond this. Nor did Ranvlin treat of the subject in a clear manner. It remained for Briquet, in 1855, to show that it did occur in children, and as frequently as in adults. At that time Carter and Brodie had already published their admirable articles on hysteria in adults, but they had ignored its presence in childhood. Since Briquet's time, Bourneville, Baginsky, Tourette, Casaubon, Ollivier, Clopault, Richer, Charcot, etc., have enriched the literature on the subject. To-day it is generally accepted that hysteria is not rare among children, and that as a children's disease it dates from antiquity, as witness the children's crusades, the epidemics of chorea magna, the tale of the Pied Piper of Hamlin, etc. But this acceptance has come slowly. In the early 80's, through the work of Seeligmueller, Henoch and Schaefer, Germany, and in the last decade America and England, have followed France.

Briquet claims that one-fifth of all the cases of hysteria occur in childhood. Jolly confirms this statement for Germany. Putnam, Mills and Taylor agree that it is frequent in America, while Sachs, Burr and Jacobi seem to think its frequency is exaggerated. In this, however, they are in the minority.

It is a fact that the physician of to-day, in this country, is woefully ignorant of such subjects; that in dispensary work, where such cases are most liable to occur, these cases are often wrongfully diagnosed, and that, on account of our want of good statistics, we really have no way of observing its frequency with us.

That the Anglo-Saxon race is less liable to hysteria than other races is not an entirely wrong statement, but it sadly needs modifying. From what we shall say, it will seem that it is not so much the fault of birth, but of the difference in training. It is an undeniable fact that the Anglo-Saxon more than any other race, understands the value and importance of cleanliness, home training, good environment and bodily exercise. To this the slight immunity of the Anglo-Saxon is as much due to the racial difference in emotionality and auto-ideality.

Before proceeding further let us see what the basis of hysteria is. It is a question often asked, but never answered. Still, there is an underlying groundwork to every case. We do not refer to hypotheses. Many of these have been advanced, as that of Janet, that hysteria is due to a weakening of the psychologic synthesis; of Myers, that it is due to a disease of the hypnoid stratum, and of Liebermeister that it is a subcortical disturbance. We refer merely to definite general conclusions on which we can build our ideas of hysteria. They are: 1. Organic alterations are absent. 2. The symptoms are dependent on psychic emotions. 3. The psyche is diseased. 4. Physical disturbances increase the psychic disorder.

An example will illustrate this. A mother is walking with her child, hand-in-hand; the child stumbles and would have fallen had not the mother held her by the hand. The child screams and the mother becomes frightened when she sees the arm hang limp and lifeless. She imagines it has wrenched the arm from its socket; the child cries more and more and a physician is hastily sent for. Every attempt at movement of the arm produces pain; every touch, no matter how slight, evokes a scream of anguish. Yet no fracture, no dislocation, no contusion is noticed, the history of the accident is so peculiar that finally the physician thinks of hysteria. The child's attention is diverted, its arm is then again examined unobserved by it, and behold it can be pressed and touched and moved freely, till the child suddenly observes your actions and again the arm is limp and painful. This is a comon type of hysteric attacks in children, and we can readily see how far our four previous conditions hold. The fall had slightly wrenched its hand, perhaps produced a momentary pain. A child, always excitable, exaggerates this pain, its emotions are aroused, psychic inhibition is lost and the excitation induces a seemingly organic condition.

Such a case, however, can not occur in every child. In what children can we expect it? This leads us to the causes. In the first place our prolix French colleagues have given as causative factors almost everything under the sun. We must recognize the fact that febrile disorders, the various dyscrasias and diatheses, by weakening the constitution tend to promote the inroads of another affection; but they can have but little bearing on the disease itself. DeMussy asserted that he had never seen a case not of chlorotic origin. Reflex causes are but slightly at play in children. Sexual life is not yet formed and, therefore, does not have much importance as an etiologic factor in children. The same is true of trauma. We speak broadly, therefore, and say that anything which weakens the psychic forces or inhibits them favors hysteric onslaughts. In children we can consider this under two phases: 1. Improper education and environment. 2. Heredity.

We do not hesitate to say that the importance of the latter has been much exaggerated. If we run the gamut of all the relatives, paternal and maternal, we can not help meeting with a near or distant member who has shown signs of degeneracy or symptoms of some neurotic disturbance. It is very easy to eagerly fasten on such a history and triumphantly say that it has done it all. Charcot held that arthritic and neuropathic affections are allied, and Grasset seeks to show a relationship between phthisis and nervous diseases. This, to me, but shows how fanciful and far-fetched conclusions have been made.

Habits are formed by imitation and repetition of the acts of the parents. Hysteric parents have hysteric children, because the child is brought up, trained and developed by the parents; unconsciously and consciously, it imitates them and repeats their actions. I have not only observed this but have seen an hysteric child induce a similar attack in its mother. In what other way can we account for the epidemics of hysteria in convents and boarding schools? Example, imitation and improper training are certainly psychic causes sufficient to produce hysteria. If a child is a daily witness of the hysterical attacks of its mother or of the drunken stupors of its father, it does not necessarily inherit their condition, but it is the moral effect, the influence of their habits and teachings that may make it the same.

All the sensations of a child are not only novel but vivid; and their senses become developed through their surroundings. They reason and act according to what they see and observe. It takes little to cause them joy; less to make them sad. Now hysteria is simply a discharge of morbid influences along the various motor and sensory paths, and improper home influence and training certainly promotes such morbid states. Other psychic moments are fear or fright. Often the cause of the child's hysteria is fright caused by a drunken father nightly beating mother and child, or fear of a whipping by a stern teacher. I saw a case lately in which hysteric attacks occurred in a child almost every morning. These consisted of convulsive twitchings and contortions lasting about three to five minutes. On investigation I traced them to be fear of going to school. Removal to the country worked a prompt cure. Auto-intoxications, which are of moment in cases of adult hysteria, do not play much of a part in infantile cases.

Lamarck rightly regards habits and influence as being able to modify a child's organic structure. The brain is a passage-way as well as a storehouse. It receives, but more than that, transmits. All our impressions stored there are capable of becoming sensations, perceptions, ideas, emotions and finally acts. The volitional centers are little developed while the imaginative ones reign supreme.

Hysteria in children is very often monosymptomatic. One part of the body only is paralyzed or painful, a circumscribed spasm is found, not a general one, etc. In addition the well-known hysteric stigmata, the sensory disturbances, the anesthesia and the hysterogenetic and hysterofrenatic zones are generally found wanting. Severe epileptoid convulsions are also rare in children. The symptoms that are found are, however, generally severe and drastic in character, and never so slight and variable as found in the adult.

Inasmuch as we largely have monosymptoms in hysteric children, a systematic presentation of the symptomatology is impossible. All that can be attempted is to present the most important and frequent symptoms and symptom-complexes.

Hysteric symptoms are both subjective and objective. In every case we find some modification of psychic phenomena or alteration of personal characteristics. Mere presence of emotional conditions in a child, however, does not constitute hysteria. This error was made by the French school, whose members made the psychic stigmata of degeneration symptoms of infantile hysteria. Another error is to confuse hypochondriac symptoms with hysteric ones. The depressed, moody, self-conscious hypochondriac may be hysteric also, but not always. Hysteric persons are never afraid of disease, as are hypochondriacs, nor do they center all their thoughts on their mental and physical condition, but are rather careless, forgetful and varying in disposition.

It is evident to all that no single psychic symptom can be said to belong to one disease. Only symptom-complexes can enable us to recognize conditions and assign causes. For this reason we often find that hysteria is associated with mania, melancholia, hypochondria and neurasthenia. In the latter, the psychic condition is strikingly different from that of hysteria. In neurasthenia, the machine stops because the power has been withdrawn; in hysteria, because it is acted against by some external agent. When both actions occur conjointly, we have a confused symptom-complex which is hard to diagnose.

Hysteric children are generally precocious and egotistic, impressionable and emotionally irritable. They react to the least excitement, may become suddenly moody and sad without cause, reject their little friends, mope for hours, or they will suddenly burst out crying, break their toys and stamp and rave. They are generally capricious and have depraved tastes—pica hysteria. Some are so stubborn as to be unbearable, others so violently affectionate as to be disagreeable. The longer the disease lasts, the more does the child concentrate its mind on itself, the greater and more varied are its bodily ailments. Suggestion is the field they wander in, and more and more does imagination rule. The will weakens, abulia and metabulia result; as Paget aptly said; "it is not 'I can not' that dominates them as much as 'I will not.' "

In cases of hysteria in childhood we find flaccid paralysis, often with contractures. Paralysis of a single muscle or of all four extremities is rare. It is generally a paraplegia or paralysis of a single limb. The face is rarely involved in the paralysis. Hysteric contractures present two important characteristics: 1. They are very marked, more so than in organic cases, resisting all passive movements, but relax in sleep or under chloroform. 2. They are painful to the touch; the joints being especially sensitive. The knee-jerks are rarely increased, and thus present a differential point to many organic cases.

Hysteric paralyses at once impress one by their variability as to the degree of paralysis; relapsing and improving; changing in location and integrity, without assignable cause. Muscular atrophy may occur, resulting from the inactivity of the part. When ankle-clonus is present, the thigh generally takes part in the motion, the clonus in fact being due to contraction of the calf muscles (Gowers).

The gait resulting from functional paralysis of the lower limbs is peculiar. It is jerky, not halting nor hesitating, the steps taken being small and noticeably forced. There is no spreading of the legs, as in organic inco-ordination, no high-step with foot-drop, as in infantile paralysis and multiple neuritis, no scythe-like motion as in organic hemiplegia with the turned-in toes catching on the floor at each forward step. The muscles impress you as being unnecessarily used rather than being useless. The anesthesia of hysteria is quite different from that accompanying organic lesions. It appears in the latter in longitudinal stripes parallel to each other; grouped anatomically. But in hysteric cases it is found in circles perpendicular to the long axis of the limb, or in irregular patches, a physiologic grouping, hence the names, "stocking" or "glove type," given to hysteric anesthesia. It is true the first may occur in locomotor ataxia and multiple neuritis, and the second in syringomyelia and beri-beri, but very rarely and then gradually shading off. Patrick says that the limiting circle of hysteric anesthesia changes even within a few minutes, so that an examination a short time after a previous one will often give results differing one to two inches from a previous one. In children, hyperesthesia is perhaps more often found than anesthesia.

Astasia and abasia are often found in children. These occur much more often in children than in adults. These names apply to those conditions in which the muscles of the legs can be used, when sitting or lying down, but are unable to be used for walking or standing. They act as if they had forgotten how to walk or stand. We have a spastic, a paralytic and a choreatic form of astasia-abasia.

Another hysteric paralysis of childhood is aphonia. It is characteristic that they are able to cough or sing while not being able to speak. Hysteric stuttering is also often observed. In a case seen by me recently, the child would introduce l's into her words wherever possible, e. g., "I don't feel very well," she pronounced, "I lon't feel vely well." It was only after careful observation that I excluded aphasia and noticed the peculiar form her speech took. Hysteric blepharospasm is often observed in childhood.

We often observe choreic movements in hysteric children. I observed a child last February whose father had been stricken with hemiplegia. The child had been in the room at the time and, for weeks afterward, on every attempt to walk, her limbs became unsteady and trembled, until the child sat down again. It is probable that the paramyoclonus of Freidrich, and the chorea electrica of Henoch are hysteric diseases, similar in nature.

Facial grimaces and conditions similar to convulsive tic are often seen in hysteric children. The graver forms of spasms and hysteric attacks, as described originally by Charcot rarely are, if ever, seen in children of this country. Bruns in Germany claims that they occur as often in children as in adults. In all such hysteric attacks consciousness is rarely entirely lost, and suggestions offered during attacks are often followed. Epidemic cases are more rare than in former centuries, but still occur in boarding schools and pensions, and in isolated villages. A particular danger of the recent revival of hypnotism lies in the production of such epidemics. Hysteric coughs and tachypnea are also often observed in children's hysteria. Although sensory disturbances are rare in childhood, they are occasionally observed.

Neuralgia occurs rarely in children, except the hysteric joint neuralgias. Pressure causes pain while forcible apposition of the articular surface does not. There is not deformity, no temperature elevation, while the joint is freely movable under chloroform. Ocular disturbances of hysteric origin are so difficult to diagnose in children, when they occur, which is rarely, that they need not be discussed.

Digestive disturbances, anorexia, and vomiting may occur. Incontinence of urine is also often of hysteric origin. When necessary to exclude epilepsy, the different stigmata of this disease, the involuntary micturition, biting of the tongue, idiotic faces, peculiar aura, elevation of temperature, etc., and the stigmata, etc., of hysteria will furnish a differential diagnosis in most cases.

Some points to which I called attention in a previous article are important ones, not sufficiently emphasized: 1. In hysteric attacks the patient resists opening the eyes, while in epileptic ones he does not. 2. In the former his face is flushed and cyanotic, in epileptic attacks, pale and colorless. The peculiar chattering of the teeth in hysteria should also be looked for.

A case that illustrates the difficulty of making a diagnosis is the following one, which I saw this last winter. The notes taken at the time read: Mary M., aged 13, came to the clinic on December 13, with her father, to get treated for her fits. She said, and so did her father, that she lost consciousness daily for from ten to fifteen minutes. She has never bitten her tongue nor micturated during these attacks. On the other hand, her face does not flush nor become cyanotic, and she has hurt herself in falling. She says it seems as if something pushes her from behind and then her limbs give way and she falls. She does not menstruate as yet, is well-built, no hereditary taint, but seems neurotic. She, however, has had bad home surroundings—her mother drinks and whips her. She is very restless and excitable, and is not over-intelligent. Her father insists on questioning that she loses consciousness during the attacks. A diagnosis *in dubio* was made till further examination. Dr. Diller saw her later and, wishing to study the case, she was sent to the General Hospital. Here she had several attacks, occurring irregularly at indefinite times. She seemed to vary in them so much that the resident physician's report was conflicting, once giving a report of an attack of complete unconsciousness, foaming at the mouth of one to three minutes' duration, then of attack with incomplete unconsciousness with inability to speak. Finally she was seen in an attack during which she had crawled under the bed and from which attack some ammonia to her nostrils aroused her immediately. A diagnosis of hysteria was made and appropriate treatment instituted with gratifying results.

False diagnosis in hysteria occurs in two ways: 1. A severe organic trouble—above all others, those of the nervous system—may be falsely regarded as hysteric. 2. An organic trouble may be thought to be the cause of the symptoms when hysteria is present. When hysteria complicates organic trouble diagnosis is doubly difficult. This is especially liable to occur in hysteric children, yet hysteria is the last thing thought of by most physicians when examining a child. The most important requisite for a diagnosis is, then, complete general and special medical experience and careful observation; above all else it is necessary to at least think of the possibility of infantile hysteria. An important point in this regard is to decide what we would call a symptom of hysteria. My opinion is that all symptoms that can also be produced voluntarily, that may be simulated, may be hysteric. In other words, symptoms which are clearly organic do not occur in hysteria, as bladder paralysis with cystitis and pyelitis, decubitis, muscular atrophy with D. R., etc.

Hysteric patients always exaggerate their trouble; pain makes them crazy; they yell and fume in the wildest manner, more like brutes than human beings. When we also remember the unanatomic grouping of symptoms, the involvement of only certain muscles, as for instance in hysteric paralysis of the vocal cords, when speech but not singing is impossible, and the obvious psychic influence at play, we have a group of facts which renders it easy to decide on the hysteric nature of an attack. Just as hard as it is to diagnose the hysteric or organic nature of an affection in some cases, is it to distinguish simulation from hysteria. The prognosis is much better than in older persons. The younger the child, the easier to cure. This results from the fact that they are more easily influenced, that their psychic nature is more easily acted on. From this it can be seen that the treatment is moral. For psychic disease, the treatment is psychic. Make the parents realize their responsibility and the effects of their influence: no feebleness nor submission to the caprices of the child, but not too much vigor and no corporeal punishment. Too much severity is as bad as too much love. Unfortunately, it is just in these cases that the parents are unable to treat their children as desired. For this reason, isolation is necessary. The child, brought to a hospital, realizes itself alone; it can not call on weak parents to act against the injunctions of the physician, finds it will not get home until cured, the new surroundings, a strange physician—all these factors will work wonders. Stop all visits, even letters.

In hysteria we have marvelous cures or no cures. For this reason the family physician, if he fails to take the upper hand from the first, or if he allows the mother's word to have any influence, will not succeed in his treatment. Unsuccessful, at his or the mother's suggestion a specialist is called in. The latter is firm, isolates and cures. There are two methods to be used: 1, ignoring the patient completely; 2, allowing him no time to be sick. The latter method is the best. As soon as the patient enters the hospital start your treatment; keep him on his feet doing something till he falls asleep, and continue unceasingly till cured. If astasia-abasia is present, set the child on its feet and tell it to walk, or place it in a suspension apparatus and suddenly, without warning, allow the child to fall upon its feet; in hysteric aphonia pass a sound and command it to talk after removing, or if this does not succeed, to cough, etc. In the other method allow no one to speak to the child; let it be ignored until we might say the symptoms die out from sheer neglect.

In addition all methods used in functional cases can be tried. Massage and electricity, hydrotherapeutics and careful dieting are of benefit. When other diseases co-exist they should be counteracted by appropriate remedies. The copper salts, gold and sodium chlorid, the valerianates, sumbul, turpentin and other drugs used in hysteria benefit only by suggestion, as do the mechanical methods previously spoken of.

As to prophylaxis, it is of great moment. Children of neurotic taint should be trained away from home under good moral restraint. Public schools are better than private ones, for in them they are not so liable to become the victims of the endemics of hysteria seen in convents and boarding schools. The amount of mental labor should be carefully regulated, not forgetting, however, that excessive physical exercise is just as injurious. It is unfortunate that camp meetings and spiritualistic séances, which are the cause of many cases of hysteria, can not be prevented. Intelligent parents should be taught the value of good discipline, careful education and self-control. The physician should recognize the advantages of suggestion, and should be on the lookout for manifestations of hysteria. Splints, casts, and embrocations have been many times applied to hysteric joints. Tenotomy has been often proposed for hysteric contracture, or excision for a hysteric tumor. What enthusiastic charlatinism has done, what Mollinger and Kneipp, Lourdes and Tries have done, physicians can likewise accomplish, and the people should be educated to this standpoint.

DISCUSSION.

Dr. C. G. Slagle, Minneapolis, Minn.—I can not believe that idiopathic hysteria is so common in children under 7 and 8 years as it has been represented to be. As a symptomatic affection hysteria is not, however, uncommon. In children it is interesting from the point of view of diagnosis. I have myself made some very grave mistakes in failing to recognize the hysteria in a neurotic girl suffering from a mild form of typhoid fever, and it taught me a lesson. I did so by giving her strychnin. She became very hysterical, and I did not discover for a while that it was the strychnin that I was giving her for her underlying disease. Wood, I think, has most graphically defined idiopathic hysteria as an "ebullition on the surface of life whose depths are undisturbed." I once produced a form of weak heart that was responsible for the hysteria. Hysteria in children is less frequent than it has been represented to be. It is important to detect the underlying conditions.

Dr. Rosa Engelmann, Chicago—I do not know any more difficult task than to make the diagnosis of hysteria in children, especially when there is an absence of the usual stigmata. I recall a case in which all the stigmata were absent and it was absolutely impossible to make the diagnosis until I accidentally saw the child in convulsions. The diagnosis had been made of epilepsy previously by other physicians. I happened to see that the child did not hurt itself; I noticed also the character of the convulsive movements, and that in a few moments she was able to get up and walk about. She was placed under treatment, and for six months she had no hysterical attack. Then her father whipped her one day, and immediately the hysterical attacks recurred. The child is still under observation. I have another case in mind in which it was also difficult to make the diagnosis. Some six months previously I had seen the child with what I supposed to be a hysterical hip lesion. On consultation, tuberculosis had been excluded. Some six months later the child had entirely recovered. But subsequently there was an attack of polyuria, the child passing thirty pints of urine daily. The polyuria was so excessive that there was no rest at night, and it was not diminished by medication. Six or seven consultants were called. Finally a blood examination was made, and the malarial plasmodium found. The question then occurred to me: Was the first illness a hysterical joint due to the toxemia of malaria?" I am now able to state that after an interval of six months this child only passes from six to ten pints of urine daily, and that no sugar has been found in the urine, and that she looks robust and well. This child is of a decidedly neurotic temperament.

Dr. G. M. Blech, Chicago—I wish to congratulate the essayist on his exceedingly scientific and valuable paper. It is very difficult to make the proper diagnosis in diseases of the nervous system, particularly in children. There is enough difficulty in adults in making a correct diagnosis between organic trouble and a neurosis or a psychosis. In children it is much more difficult. Very frequently the pediatrician is almost unable to make a correct differential diagnosis, excluding the presence of organic central or peripheral lesions, and differentiating between a case of hysteria and neurasthenia.

I wish to add a little experience I had in my clinic some three months ago. A little boy about four years of age was brought in with aphasia. He could not speak a syllable. He had been able to speak when about 2 years and 3 months old, but at that time he had been locked in a dark room by his playmates, and ever since then he had not spoken at all. An eminent physician who was present at the time to which I refer, thought of central nervous disease as the cause, and another suspected tuberculosis. In spite of a most thorough physical examination nothing definite could be elicited, and therefore by exclusion a diagnosis of hysteria was made. The mother was uneducated, and hence I instructed her merely to use mild hydropathic measures, and told her to be kind to the boy. In two weeks she returned, and in the presence of several physicians the child pronounced a few words, such as "papa," "mamma," "water," and "walk"—in other words those in which the nasal sounds were absent. After a few minutes' practice it did something better, and after three or four weeks' further treatment it was much improved. It is now doing well. The case is of interest because of the difficulty of diagnosticating aphasia when due directly to hysteria, as in this instance.

Dr. Harriet E. Garrison, Dixon, Ill.—My experience in a small town would lead me to think that there is a great deal of hysteria among children. I know I have had at least eight cases in the last two or three years. One patient came under my care first when she was a girl of 7 years. She had been under the charge of several physicians. One of these—a physician who stands very high in the profession—had treated with carbolic acid spray and tincture of iron, an exudate occurring in the throat every time she had an exacerbation of her trouble. His diagnosis was "diphtheria," in spite of the fact that it was necessary to treat her for this complaint again and again at intervals of a few months. When she came under my care I soon found high temperature, 105; exudate in the throat and generally a bright scarlet rash on the flexor muscles of the forearm, but once the rash covered the whole cutaneous surface and so closely simulated scarlet fever that I should have given a diagnosis of this disease had this been the first attack after she came under my care. A few warm baths, with acetanilid for the high fever and nerves and a seidlitz powder caused the disappearance of all disease, and the fourth day she was again riding her pony. Fancied abuse of this pony by some student tourists had caused the anger which brought on this attack. I found these attacks came after nervous excitement, and I then diagnosed the affection as a neurosis. In spite of all that I can do there are still occasional attacks, although her will is gradually gaining control. She has been under my care the greater part of the time for thirteen years. Not more than two months ago I saw an attack of stuttering and hysteria in a young boy. Before he left my office he was able to speak better, so that the neurotic condition was evident. I have under my care a woman who has hysterical attacks which are the result of taking strychnin. It took me about six months to find the true cause of the trouble, and then I discovered that every time she took strychnin in 1/60-grain doses a convulsion followed the first dose. After the strychnia had been discontinued these convulsions entirely disappeared.

Dr. C. G. Slagle—The best of all treatment for hysteria, so far as I know, is hypnotism, and I have tried all forms of treatment.

Dr. Harriet E. Garrison—The best of all treatment for hysteria, in my opinion, is teaching the parents to discipline their children as soon as they are able to know anything. If this were done there would be much less hysteria.

Dr. Ewing, Salt Lake City—I have had a number of such cases in children, and I have threatened them with hypodermic injection. Usually this threat has been sufficient to effect a cure.

Dr. Ed. E. Mayer, Pittsburg, Pa.—The remarks made go far to prove that hysteria in childhood is frequently observed in America, notwithstanding statements of Sachs and others. The classification proposed by Dr. Slagle, or idiopathic, simple and symptomatic, does not strike me as either scientific or adequate. Idiopathic is a term applied when the cause is unknown, and should be relegated to the past as having no place in scientific nomenclature. In cases of hysteric joint disease, the important part is to exclude organic disease. The diagnostic points I have given in the paper should be of service. I spoke there of the absence of temperature elevation, absence of inflammation *around* the joint—but if present, it is found extending upward and downward from the joint. Then again, by distracting the attention of the patient, it will be found that the articular services can be rubbed together without causing pain, which would be impossible in organic disease.

I consider hypnotism the worst thing a physician can use in infantile hysteria. Hypnotism is merely a form of induced hysteria and is always dangerous in children. Suggestion, however, may be of benefit if the child is of a sufficient age to receive it. But hypnotism is even more harmful than the spiritualistic séances and camp-meetings which are productive of hysteric boy-preachers and the like.

The most important part of the treatment is isolation and rest and I would ask you for your own protection to isolate every hysteric child if you expect to cure it.

CONVULSIONS IN INFANTS AND YOUNG CHILDREN.

THEIR POINT OF ORIGIN, NATURE, CAUSE AND MANAGEMENT.

BY C. G. SLAGLE, M.D.
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No apology is demanded for discussing here what is only a symptom and not a disease per se; for of the many sudden, violent, and dangerous affections of very early life, I know of none which demand more prompt, careful, and skilful effort of the physician, than convulsions. Their suddenness, gravity, and frequency give to them a peculiar importance; and it is here, in a peculiar manner, that human life often hangs suspended on a prompt impulse of the physician's trained and cool intelligence. For what can be more terrifying to the parents and friends, or more dangerous often to the little patient, than an infant in the agonies of a well-developed eclampsia.

Most authors attempt to treat this intricate subject under four headings, or divisions, as: 1. Points of Origin. 2. Nature. 3. Causes. 4. Treatment or Management. But these divisions can not be discussed entirely separately, for in discussing the point of origin, we are necessarily contemplating, to a great extent, the cause, at least the "proximate cause," and also to a considerable extent, the essential nature of convulsions. Nevertheless, as we must systematize what we have to say on the subject, perhaps we can not do better than to follow these divisions as far as possible.

For purpose of study and treatment, convulsions have been variously classified, as to their points of origin, and exciting causes. The late Prof. J. Lewis Smith discussed them under the headings of "Idiopathic," "Symptomatic," and "Sympathetic," the first class being those purely functional—as from sudden, violent emotions, etc.; the second class, those from brain lesions; the third, those occurring as complications of diseases other than the brain—as pertussis, exanthems, etc. Professor Holt groups them under three headings, as those occurring from direct irritation of the cortex of the brain; those from reflex irritation; those from "toxic" influences. Other divisions, as you know, are into "Central" and "Peripheral," or "Centric" and "Excentric," etc. Professor Rotch has tabulated as to causes in an admirable manner under the two significant headings of "Central" and "Peripheral"—or reflex—and I think all of the *exciting* causes can well be grouped in his classifications.

Morris J. Lewis[1], for the purpose of differential diagnosis, etc., groups convulsions into eight classes, as follows:

1. Convulsions may be evidence of reflex irritation from some temporary and comparatively trivial disorder, such as constipation, overloaded stomach, irritation of teething, earache, worms, genital irritation, etc.

2. They may constitute an initial symptom of one of the exanthemata; or some other acute disease, either thoracic, spinal or cerebral, or they may be due to thermic fever.

3. They may indicate that the child is suffering from some general condition of ill health, such as indigestion, rickets, cyanosis, etc.

4. They may indicate gross intracranial disease of more or less chronic nature.

5. They may be a symptom arising during the course of one of the acute diseases, such as whooping-cough,

or may be an evidence of toxemia in the exanthemata or kidney disease.

6. They may be the result of various traumatisms, such as injuries to the head, or a violent hemorrhage; other than cerebral; causing cerebral anemia, or from severe burns or shocks.

7. They may be one of a *series* arising without assignable cause; and constitute epilepsy.

8. They may indicate nothing more than a "A Mode of Dying," especially in those diseases which are accompanied by severe watery diarrhea and vomiting, as cholera infantum, etc.

This comprehensive summary would seem to embrace most of the exciting causes fairly well grouped; and as Lewis remarks, "Two or more of these classes may be found associated in the same case."

Some such grouping, together with the systematic tabulation of the various exciting causes, as Dr. Rotch has given us in his lectures, under the headings of "Central" and "Peripheral," will do much to facilitate the diagnosis and management of these often intricate symptomatic affections.

I take it for granted that this discussion is understood to exclude the somewhat similar, and often nearly allied, spasmodic neuroses, as puerperal eclampsia, epilepsy, chorea, hysteria, tetany, trismus; and, to some extent, that local spasmodic affection of infants, "laryngospasm." I accordingly confine it for the most part to "an acute affection of infants and young children," arising often without perceptible structural lesions of the nervous systems and characterized by partial or general convulsions, either "tonic" or "clonic," accompanied by more or less complete loss of consciousness. In other words, I limit it, as far as possible, to "idiopathic general convulsions of young children."

Points of Origin.—Many diligent and ingenious investigations as to the *points of origin* and "proximate cause" of convulsions have been made by such distinguished investigators as Kussmaul, Tenner, Brown-Séquard, Nothnagle, Gowers, Dickson, Marshall Hall, J. Hulings Jackson, Allbutt, Jacobi, Hammond, and a host of others, both in this country and abroad; but up to the present, without satisfactory or demonstrable conclusions; or even anything like uniformity in the theories deduced from their painstaking experiments and observations, and this part of our subject seems to be yet *sublite*. I do not therefore believe this is the proper place to go into a discussion in detail, of the various theories deduced from experimentations which have been presented from time to time as to the exact origin, or proximate cause and essential nature of these convulsions; they are too many and various and contradictory to be profitably discussed in a limited paper.

That much is yet to be learned in this direction seems certain. Holt says: "They are motor discharges from the cortex of the brain." Morris J. Lewis says: "Convulsions are in all probability due to an *exaltation* of the *lower* nerve-centers; or more frequently, to a suspension of the inhibitory power of the *higher* cerebral centers"—or both of these conditions may exist at the same time—and further, "It remains to be said that we are still very much in the dark as to the immediate processes producing convulsions."

Taylor and Wells[2] have well said: "Infants have their nervous system in process of rapid development—only the component but undifferentiated parts of which are in great activity, ready to receive and re-energize limitless new impressions." This may be done systematically and wholesomely, or irregularly and excessively, resulting in growth and development or explosively doing harm. At birth, the lower centers only are developed, hence control is limited until the higher centers become competent to exert *inhibition;* hence in the earlier months of life convulsions are common, and less so after two years.

Peterson[8] says: "Convulsions, whether local or general, have their origin in katobolic discharges of nerve cells, either in the cortex, or at the base of the brain." Further, he remarks: "There is no form of eclampsia generated from the ganglion cells in the spinal cord." This remark is made after reviewing and dissenting from J. Hulings Jackson's theory, that there are three levels from which such discharges may occur—as from the cells of the pontobulbar region, from the Rolandic area, and from a level which he (Jackson) conceives to exist in the frontal lobes, and to represent the highest control of sensory-motor functions. However, after quoting these plausible views without further comment, and having nothing new to offer or suggest on this intricate part of our subject, I shall pass at once to the consideration of the various well-known *causes* of convulsions, as the predisposing, exciting and proximate. Of the first and second at least, we have learned considerable.

In discussing the causes of disease, before my class, I am accustomed to employ an illustration, which I heard long years ago in the University of Louisville, Ky., and which has seemed to me to be well chosen—where the different causes generally given as the predisposing, exciting and proximate, or immediate, were compared to making a fire in a stove or grate; in this the combustible material arranged first is the predisposing, the match the exciting, and the union of the oxygen of the air with the carbon of the fuel is the proximate cause of the resultant combustion. I am aware, however, that some object to the designation "Proximate Cause," and I find it much less frequently employed than formerly, as it is really only the ultimate *effect*, rather than a *cause*. Nevertheless, I shall hold the illustration as an apt and proper one to enforce an understanding of the operation of the *causes* of disease.

In considering the predisposing causes, we must note as contributory, age, sex, heredity, temperament, environments, habits, season, diathesis, etc., while the exciting causes, as so well grouped by Rotch and other authors, will include as "Central": 1. Diseases of high temperature. 2. Diseases accompanied by vascular stasis. 3. Diseases characterized by anemia and exhaustion. 4. Various toxic causes. 5. Organic central lesions. 6. Presumably organic disturbances of the brain, as epilepsy, which is excluded from this discussion, and of "Peripheral" (or reflex) causes; rachitis, food, intestinal parasites, dental irritation, foreign bodies (in the ear, nose, etc.), hot baths, burns, etc., mental disturbances (such as fright, etc.) and many others like these; while the "Proximate Causes" must be considered with the points of origin and essential nature of these "Nerve Explosions."

Of all the manifold predisposing causes of convulsions in young children, the most important one is the natural instability of the nervous centers, characteristic of early life, and associated with the non-development of voluntary centers of the cortex; hence it is that age is a most important factor in the etiology of convulsions; and under 2 years is recognized as by far the most susceptible period, for patent reasons already stated. Statistics, indeed, show that over 60 per cent. of deaths from convulsions, up to 20 years, occur in infants under 1 year of age. Convulsions are not only more common in infancy, but much more fatal than later in life, and for reasons that are very apparent. It has been stated by some good observers that males seem to be more susceptible than females; indeed, carefully-gathered statistics seem to justify this conclusion, but it has been suggested by others that inasmuch as more males than females are born each year, the larger number of deaths in males may thus be reconciled, for surely it would be contrary to reasonable expectation, as females are more delicately organized, while the exciting causes are probably about equal. While high atmospheric temperature is a recognized predisposing cause, we also recognize the fact that elevated bodily temperature in infants may be an exciting cause of convulsions, where there is a predisposition to those motor nervous explosions. A temperature, much above 103 F., continuing for several hours, in a highly neurotic child, is very likely to induce convulsions. I have seen an attack of convulsions precipitated in a very neurotic infant, from the application of a sharp sinapism, and more than once from a cantharidal vesicant.

I think there is sufficient evidence to justify the conclusion that there often exists in young children, what has been aptly called "a conclusive tendency," probably hereditary, when the predisposition is so marked that very slight excitation, such as anger or fright, or a trivial traumatism, indigestion, coryza, etc., may precipitate a convulsion; and which, in an infant of naturally a more stable nervous equilibrium, would do no harm. Severe burns or scalds are very likely to produce convulsions. One of the most persistent cases of eclampsia I have ever seen occurred recently from a severe scald involving most of the surface of the trunk and abdomen of a girl, 3 years old, who was in almost constant clonic spasms for twenty-four hours before death came to her relief.

Convulsions in infants are not uncommon in the inception of the graver forms of scarlet fever, and, if after the evolution of the rash, are almost uiformly fatal.

As to what exact rôle dentition plays in the causation of convulsions, good observers are not well agreed; but of the many attacks of eclampsia which I have witnessed in young children during dentition, I can not remember one case where I could be sure that the eruption of the teeth was more than a predisposing cause of the spasm; and I can affirm the same of the so-often accused intestinal worms. These may often be contributory, as one only of several factors, inducing convulsions, and should not be entirely ignored. Jamieson correctly remarks: "Dentition as an exciting cause of convulsions in infants, is not to be considered until all other possible factors are eliminated, as more than double the number of deaths, from convulsions in children occur during the first years of life, and according to statistics, over two-thirds of these occur during the *first six months;* so that dentition in these cases can not be taken as a cause."

But of all the causative agents in producing convulsions in young children, undoubtedly the food is the most common; probably, at least one-half of all convulsive attacks in infants and young children can be traced to this cause; either food wholly improper in quality, too much in quantity, or too frequently given. So also, bad hygienic conditions often contribute to this accident. Hence the necessity of emphasizing the fact that infant feeding and infant hygiene are the most important subjects in pediatric teaching.

While infants being fed with commercial foods, cows' milk, etc., are the most frequently attacked, I have several times seen the mother's milk precipitate violent convulsions in a healthy infant, within an hour after nursing, and which ceased when taken off the breast, only to return speedily when the breast milk was resumed. Another fruitful source of convulsions is to be found in rachitis and other forms of acute or chronic malnutrition, especially laryngospasms and tetany. So also toxemia, either from microbic agency or from renal affections, is a well-recognized source of infantile convulsions; and aside from all these factors, and many more, as causations of eclampsia, we must also recognize the fact that convulsions are often only "A Mode of Dying," in young children, when occurring late in acute affections, and continuing until life becomes extinct.

In regard to the diagnosis of eclampsia, it is not difficult as a rule, as we have only to differentiate from epilepsy, which the paroxysms so nearly resemble; the main point of differentiation is to remember that epilepsy is rare in infants under 3 years, the period when eclampsia is most frequent; that epilepsy, unlike eclampsia, is not preceded nor followed by symptoms of acute illness, and has a strong tendency to recur at more or less regular intervals and to become a chronic affection, but notwithstanding the paroxysm or motor nervous explosion, it does not differ in appearance from that of eclampsia; indeed, we must recognize the fact that what seems to be at first true eclampsia does occasionally merge into genuine epilepsy. Perhaps the most distinctive feature in epilepsy, when recognizable, is the peculiar "aura," which immediately precedes the "fit," and which is never present in ordinary eclampsia; but this being only a subjective symptom, it is of little value in diagnosis in infants and children under 4 or 5 years old.

As to the essential pathology of these convulsions, which are only symptomatic of so many different proximate causes, very little light can be obtained by post-mortem investigations; the "findings" will be as various as the producing causes.

When death occurs from general convulsions, it will be either from venous stasis in the brain—or effusion or hemorrhage on to that organ—or else by exhaustion from the prolonged attack. In laryngospasm, it may occur by apnea, or suffocation.

The treatment of convulsions is naturally divided into two parts: to relieve the paroxysm as soon as possible; and to endeavor to prevent its recurrence, by removing the cause, or rather by treating the systemic condition of which the convulsion has been only a symptom. But as the exciting cause can not always be readily determined in these emergencies, and as relief of the paroxysm is imperative, it is most fortunate that there are several agents and procedures available to quell the disastrous nervous explosion, and applicable to all cases, until we can investigate the exciting cause.

The first thing generally done is to immerse the child in a warm bath, from five to fifteen minutes, at a temperature of about 96 to 100 F.; or if there is high bodily temperature, about 90 F., while cold water or ice is applied to the head and face; at the same time it will be well to examine the gums, if teething, for possible dental irritation, and if found, which will be only seldom, the gums should be lanced. Next, if good reasons exist for suspecting digestive troubles, and there is no great apparent cerebral congestion, an emetic of ipecac with or without alum; or a hypodermic injection of apomorphia, 1-20 to 1-40 gr. will serve as well. My experience leads me to believe that the dangers of emetics in convulsions, in producing or intensifying cerebral trouble, have been greatly exaggerated, and that they are often indicated, not only as local aids, but as antispasmodics, relaxants, and often calmants and antipyretics, as well as sudorifics and revulsives. If, however, it seems probable that the source of irritation is in the alimentary canal, below the stomach, an enema of warm water with common salt will be in order, and, as soon as possible, a cathartic of calomel, ipecac, and bicarbonate of soda may be given, to be followed in four hours by castor-oil and turpentin—or if in haste, a saline. If the child is in a paroxysm when we enter the chamber, besides the remedies already mentioned, and indeed as a first remedy to "break the spasm," chloroform inhalation will be proper.

After these preliminaries, our next best resources are in the administration of the bromids, and sometimes chloral, ether per os or per rectum; they may be given separately or combined, when both are indicated, as they often will be. My preference has generally been for sodium or potassium bromid ʒi, chloral hydrate gr. iii to v, according to age, given in solutions per rectum. In some well-chosen cases, without cerebral congestion, and when there is great pain, a prompt hypodermic injection of morphia and atropia will yield good results in calming the nervous excitation, but demands great discrimination in its employment, especially in very young infants.

In what Smith and some others call "sympathetic" convulsions, i. e., those occurring from some acute disease, outside the cerebrum or central nervous system, opium in some form is often very useful in quieting the nervous excitement. Happily such heroic measures as venesection, blisters, and severe counterirritation to the surface of the body of infants to "break spasms" have long since become obsolete; nevertheless we occasionally see cases of convulsions where venesection might serve us as well, and it is a question with some of us older physicians, whether the pendulum in venesection in children has not swung too far in the opposite direction. If there is high temperature, antipyretics and cool sponging, or the "pack" are always indicated. However, after the paroxysms have been controlled, the remedies should be addressed to the removal and prevention of the exciting cause, and later also to the predisposing conditions, as far as possible. This means especial attention to details of diet, hygiene, etc., which so often contribute largely, if not wholly, to the production of these convulsions. The bromids should generally be continued for some time after the paroxysms cease, in order to prevent their recurrence, as well as to remedy the results often left on the nervous centers. It is well known that one convulsion predisposes to another, and sometimes a series ending in epilepsy, which so closely resembles eclampsia in its clinical symptoms and objective features.

If the convulsions are found to be what some of our authors denominate "symptomatic," though always "symptomatic"—but especially of brain lesions—or "sympathetic" of affections other than cerebral disorders, the management will be properly addressed to those pathologic systemic affections, the discussion of which can not come within the limited scope of this paper; and although admitted that laryngospasms of infants are so closely connected with general spasms, I have not deemed it wise to attempt their discussion in this paper.

If it be a fact, and it doubtless is so, that some cases of convulsions require depletion, others repletion, others evacuants only; others antispasmodics and calmants only, while still others demand refrigerants and revulsives, how very much discrimination is demanded in the treatment of an affection, which, be it remembered, is always only a symptom—though often a dangerous one—of so many diverse conditions, either temporary—i. e., functional—or permanent (organic); also what demand for ready, cool and prompt action.

Impressed, as I have been, with these suggestions, it has been my method to emphasize to my class the importance of always having with them when becoming practitioners, something like an emergency outfit for the prompt management of convulsions, during and between paroxysms. The first and most important of this will be clear, cool, and ready intelligence. Then the armamentarium should include chloroform, bromids, chloral, ipecac, apomorphia, a good hypodermic syringe—in good order—with proper tablets of morphia, atropin, hyoscyamin hydrobromate, a good fountain syringe, and a stomach-tube, fever thermometer and catheter, as it may be in the night and some distance from a drug store, when and where the physician is called in these emergencies; hence the necessity of being always ready for prompt action.

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DISCUSSION.

Dr. A. C. Cotton, Chicago—The last sentence of this extremely interesting paper aroused in my recollection a series of observations along a line which has particularly interested me during the past five or six years. A year ago, at the meeting of this Section in Denver, I read a paper on the subject of "Disturbed Lactation, Some Causes and Effects." Among some of the effects I called attention to not infrequent attacks of convulsions, apparently as a result of discontinuance of lactation. During the last year I have concentrated my attention somewhat more closely along this line of observation, and among all the causes assigned in the able paper just read for the production of convulsions, it seems to me that food plays the most important part. Errors in diet, arrest of digestion, imperfect assimilation, with the consequent evolution of ptomains which produce intoxication of the nerve-centers, whether by reflexes from chemical irritation in the alimentary tract, or from pressure of gases in the bowel—all excite the nervous system, and cause convulsions; but I believe that dietetic errors and imperfect digestion are the most frequent exciting causes of convulsive seizures. My attention has been called more particularly to convulsive seizures in infants at the breast. There the supposition is that there is not so much liability to dietetic errors as in artificially fed infants, but some careful observations on that point will satisfy you, I think, that very frequently the quality of the milk secreted in otherwise normal mammary glands is subject to sudden and very positive changes, not only in the grosser aspects, but in its chemical reactions. Mental influences, hygienic influences, climatic, thermic and many other influences will induce a change in the quality of the mother's milk. From the recorded observations it would appear that the most pronounced causes are those which affect the emotions—the psychic influences. In my paper of a year ago I alluded to the effect of poisons on a nursing woman. In at least seventy-two cases, the opportunities for observation were especially favorable, and these received my most careful attention. I reported fifty-one cases one year ago. Since then my attention has been called to a number more. Careful scrutiny, I think, will show that not infrequently undue, unusual, or excessive coitus on the part of the nursing woman will suddenly and remarkably affect the quality of the milk, and produce a marked disturbance in the nursling, which is very commonly manifested by convulsions, and occasionally, even by death.

Dr. Kimball of Indiana—The etiologic factors which enter into these cases are perhaps generally understood by the profession, but how to manage such cases is a problem of much interest, at least to me. Of all the exciting causes, I have found indigestion, or the toxins arising in the alimentary tract the most common. I recall one case in which there was not only the usual convulsion, but the forearms were flexed on the arms and the hands on the forearms, and associated with this was a peculiar distortion of the face. Although the mother said that the child had not eaten anything out of the way, I administered a calomel purge. The next day, on visiting the patient, a child of 4 years, it was looking considerably better. The mother then told me that the child had evacuated nearly a tea-cup of beans. I recall another case in which every time the child ate peanuts it was necessary to call on me. In the treatment of these cases I have derived especial satisfaction from the administration of gelsemium. Its action is, of course, on the cerebrospinal centers. It seems to control the convulsion more quickly than anything else I have used, and it is easily given.

Dr. Cotton—Don't you think the calomel purge is better than the gelsemium?

Dr. Kimball—Yes, but I have often found that while the calomel was acting the gelsemium proved useful by calming the cerebrospinal system.

Dr. Ewing, Salt Lake City, Utah—Aside from the causes which have been enumerated, and especially the overfeeding of children, I find, in male subjects, that a most frequent cause of spasms is an adherent prepuce. I usually examine the prepuce in cases of convulsions, and I have found that by remedying this many cures could be affected. It is my custom to wash out the bowel with about half a gallon of water, and also to give a calomel purge instead of simply treating the fever.

Dr. J. A. Work, Elkhart, Ind.—Every effect has its cause, and hence when convulsions are present we should look for the cause of the pathologic condition. I believe if we are careful we can usually ascertain the cause, and then it is a comparatively easy matter to remove it. I remember, about twenty years ago, treating a very severe case of convulsions in a child about ten months old. The next day we found in the stools a small piece of corn-cob, and the next day a small piece of fish.

Dr. Foster of Illinois—It seems to me that in the enumeration of these etiologic factors we should go just a little further and try to find out whether there is a stimulation of the nerve-cells of the brain, especially the motor areas, or whether there is a depression of these areas. What is the pathologic process which is taking place in the nerve-cells of the brain? That is what we wish to know. Some physicians give stimulants; others give bromids with chloral. To determine which treatment is proper we should know what is the process to which these nerve-cells are subjected. There is a clonic convulsion present. In the majority of cases, I think, instead of the nerve-cells being stimulated they are depressed, and their normal tone lowered. This indicates the line of treatment to be followed.

Dr. E. E. Mayer, Pittsburg, Pa.—This reminds me of Flechsig's theory of the association fibers of the brain, which he claims govern the projection fibers and thus exercise an inhibitory influence on the motor zones. In children these fibers are not developed, and hence the cortical cells in childhood are easily excited. Whether his hypothesis is correct, I can not say, but it is certain that the inhibitory power of a child's brain is much less than that of an adult. Nothnagel's epileptic center in the pons may also aid in the production of convulsions.

One fact must be remembered before everything else. Convulsions are only a symptom. No diagnosis is made by saying a child has convulsions, any more than if you say a child has pain. What causes the convulsions, to what disease is it due? What has excited the cortical irritation?

All the previous speakers have spoken of the convulsions due to reflex causes, to poisons in the blood, to infection, etc., but no one has emphasized convulsions due to organic brain disease. Convulsions are often the first symptom of brain disease, and, until other pronounced symptoms are forthcoming, the physician does not think of brain tumor, brain abscess, etc. A convulsion is also often the first sign of a future epilepsy.

Treatment then, can only be successful if the cause is found and the exciting factor removed. To check the convulsion I give chloroform, and then at my leisure search for the cause and treat it. No matter what the cause is, bromids in doses of 2 to 5 grains are advisable to allay cortical irritation.

Dr. Foster of Illinois—Will not the same stimulation in the nerve-cells of the child produce the same result as in the nerve-cells of the adult brain?

Dr. Rosa Engelman—From the very fact that anatomic studies of the brain of the child show lack of development it is easy to account for all forms of convulsions, whether toxic, reflex or what not.

Dr. C. G. Slagle, Minneapolis, Minn.—This is a large subject, and one which can not be satisfactorily treated in one paper, but I am glad that it has elicited such a full discussion, and I thank you for it. I hope Dr. Cotton will pursue his interesting investigations further. I am sorry that I did not have time to discuss the treatment fully. To check the spasm, the best method is the inhalation of chloroform. It is also useful to give an enema of salt water, both to produce an evacuation of the bowel, and because of its revulsive effect. It is also desirable in many cases to give an emetic, particularly in those cases in which from the history it seems probable that the undigested food has not passed beyond the stomach. I think I get just as good results from enemas of salt water as from enemas containing bromids. The adherent prepuce is certainly a contributory cause, but I doubt if it is an exciting cause. It is true that we must search for the cause, but for the immediate needs we can satisfactorily control the convulsion with chloroform as I have said.

SPASMUS NUTANS.

BY I. A. ABT, M.D.

CHICAGO.

Spasmus nutans is a disease which was first described by Romberg[1] and Henoch,[2] and which appears in the literature under a variety of names: head-nodding, rotatory and rhythmic sypasms. Gyrospasm of the head is a term which Peterson[6] has applied to the rotatory variety of the disease. Two cases of spasmus nutans have come under my observation, which I desire to report.

Case 1.—B. R., aged 9 months, was sent to the Michael Reese Hospital, Feb. 15, 1898.

Family history: The father is living and well. The mother is a dwarf and has borne five children; two are dead; one is said to have died of pneumonia at the age of 11 months; the other, a male child, died at the age of 7 months, after an operation had been performed on its head for some disease the nature of which was not known to the parents.

Present disease: Five weeks before the child was admitted to the hospital, it fell from a high chair, cried immediately after having fallen, and continued to do so for about ten minutes. After this it resumed its play. On the third day after the injury it began to shake its head fore and back. The movements have continued almost incessantly since. These were sometimes interrupted when the child's attention was attracted, but the nodding very soon began again. The movement ceased during sleep. The movements of the arms and legs were free and co-ordinated, appetite good, bowels regular and sleep normal.

Physical examination: The patient was fairly well nourished, the skin pale and slightly icteric.. There were no marks of trauma on the head, and the fontanelle was normal; the pupils were regular and reacted to light; there was no strabismus. After a prolonged observation it was noted that the child had a lateral nystagmus of both eyes. The face presented nothing abnormal. The examination of the pharynx and tongue was negative. The child had nodding movements of the head, which were almost continuous; at times, if it fixed on an object with both eyes, a slight rotatory movement of the head occurred soon followed by the usual nodding. The thorax showed, in its lateral portions, a slight depression. A rosary occurred on the ribs. The extremities showed a slight enlargement of the epiphyses, and plainly indicated the presence of rickets. The examination of the heart and lungs was negative, while the abdomen was protuberant; the abdominal organs presented nothing abnormal. The ophthalmoscopic examination revealed normal fundi.

The child remained at the hospital for six weeks, at the end of which time the movements had entirely disappeared. It was readmitted to the hospital ten days after its discharge, because it was suffering from acute gastro-intestinal catarrh; it recovered from this in a fortnight. During all this time the child did not show any return of the nodding spasms, but reported subsequently, at intervals for a period of six weeks, without any return of its trouble.

Case 2.—L. B., aged 9 months, was admitted to the Children's Ward of the Michael Reese Hospital, May 5, 1898.

Family history: The father is living, though he is voluntarily separated from his family. The mother is living and well. The patient is her only child.

Previous disease: The mother reported that the child had a purulent discharge from both ears three months ago. The ears were examined while the child was in the hospital, and no indication of an active suppurative process or any perforation of the membrana tympani could be found.

Present disease: Three months ago it was seen that the child made incessant rotatory movements of the head during its waking hours; also that it had nystagmus of both eyes. Arresting the attention sometimes caused a slight cessation of the spasms, though the movements occurred after a momentary pause with apparently new vigor, and proceeded as before. The nystagmus was horizontal in direction; it was continuous during the waking hours, save for momentary interruptions at short intervals, and occurred in both eyes. Bandaging the eyes or excluding the light seemed to stop the movement of the head for a short time. There was no strabismus; the ophthalmologic examination made by Dr. C. P. Pinckard showed both fundi normal. The child was unusually bright and active, and of excellent physical development, and remained at the hospital for forty-seven days.

The physical examination, except the points already referred to, was negative.

Treatment: Bromid of soda was administered in 3-gr. doses three times daily, and the child nursed at the mother's breast, and placed under the best possible hygienic conditions. The child improved very much, though at time of its discharge it occasionally showed some rotatory movements of the head and slight nystagmus.

A disease which has been frequently confused with spasmus nutans is eclampsia nutans, or the salaam convulsions described by the older authors. West[3] says that children who are attacked with this disease bend the head and body slightly forward, a movement which is continued with great rapidity, sometimes twenty, fifty, or even a hundred times, and then ceases, but returns once or oftener every twenty-four hours. During the attack the child seems bewildered, but complete consciousness returns as soon as the movement ends. In addition to these attacks, there is a general failure of health and enfeeblement of the mental powers. The tendency of the disease is to pass into confirmed epilepsy. Soltmann[4] and Gerhardt[5], both of whom have written treatises on spasmus nutans, do not separate it from eclampsia nutans. Gerhardt distinguishes two varieties of the nodding disease, a mild and a severe form. The mild, he maintains, is a reflex spasm, and the severe form is due to some variety of meningeal irritation, though he adds that the precise pathology anatomy is not known. The severe cases terminate in idiocy or epilepsy. The latter variety, it is obvious, is to be classified as cases of eclampsia nutans. In more recent times there has been a tendency to omit the term spasmus nutans from nomenclature, and to describe the disease under a variety of other names. Thus Caille[12] describes "two cases of nystagmus associated with clonic movements of the head in rachitic babies." Peterson[6] reports five cases under the name of "gyrospasm of the head." Samuel Gee[7] describes the condition as "head-shaking in children," and Holt[8], under the name of "rotatory and nodding spasm of the head." W. B. Hadden[9] refers to the condition as "head-nodding or head-jerking." Dawson Williams,[16] in a recent treatise on the "Diseases of Infancy and Childhood," speaks of " clonic spasm of the neck," which may be rotatory or lateral. Spasmus nutans, he erroneously remarks, is sometimes called eclampsia nutans. R. W. Raudnitz[11], in a very exhaustive monograph treating of this subject, retains the name spasmus nutans. This nomenclature has the advantage that it prevents the evercontinuous multiplication of terms to describe one and the same disease, and it also has a historic and clinical value in that it preserves for us a description of the earliest cases of eclampsia nutans with cases of spasmus nutans.

Head movements: The head may move at the rate of 80 or 100 times per minute, though the movements may be as rapid as 120 or 160 times per minute, particularly if the child be excited. The movements consist in oscillations from left to right or right to left. Peterson[6] reported five cases, all of the rotatory variety, and he described them under the name of gyrospasm. Of the 15 cases reported by Raudnitz[11], 5 showed nodding movements, 6 rotatory movements and 2 were of the mixed type, i. e., sometimes the rotatory and other times the nodding movements occurred. In 2 cases no movements of the head were noted. Frequently the first manifestation of the disease is a wryneck, and then this is followed by the head movements or the nystagmus. The onset of the disease in any case is gradual.

Caille[12] observed that the head movements ceased when both eyes are bandaged. Raudnitz confirmed this observation in a number of his patients. He also observed that the wryneck ceased when both eyes were bandaged. He found in a certain proportion of his cases, that the movement ceased if one eye was bandaged.

The nystagmus: While there are cases of genuine spasmus nutans reported in the literature where nystagmus is said to have been absent, nevertheless recent studies teach that nystagmus is present at some time during the course of every case, though it may disappear before the involuntary head movements have ceased. The nystagmus may be present in one or both eyes. It occurs later than the other symptoms, and disappears, as a rule, before other spasmodic movements, though cases do occur where the nystagmus is the most prominent symptom. In regard to the direction of the oscillations of the eyeballs, we find that various combinations occur. Thus the movements may be horizontal in both eyes, or vertical in both, or the movement may be so arranged that vertical, horizontal and diagonal oscillations occur in the same eye at different times. The movement in one eye may be more marked than in the other, or the nystagmus may be absent in one. Peculiar temporary changes occur in the position of the eyes, adduction of one is frequent, abduction occurs less often. Spasmodic movements of the lids is of frequent occurrence, though excessive secretion of tears is seldom observed. Cases of strabismus have been reported by most observers. The fundus of the eye has been reported as normal.

Etiology: Much speculation has been indulged in as to the cause of this disease. The older authors disposed of the etiology by considering the condition to be of reflex origin; thus Henoch[2] attached great importance to dentition, but we know that the disease occurs commonly before the period of dentition, and also after the temporary teeth have appeared. Derangements of the alimentary canal have been considered the cause. Rickets is so commonly found associated with the disease that it has been rather generally regarded as bearing a causal relation to it. Raudnitz[11] found rickets present in 14 out of 16 cases. Dickinson[13], Hadden[7] and Caille[12] offer corroborative statements.

Head injury not uncommonly precedes the disease, thus, in 3 of Hadden's cases and 2 of Peterson's, as well as in 1 of my own, the history of traumatism could be obtained. Holt[3] suggests that possibly the disease is a variety of cerebral concussion. B. Sachs[14] says that if the condition be developed in late years, it may be regarded as a habit, but if the movements begun in early infancy are associated with nystagmus, strabismus or idiocy, one need not hesitate to refer them to a cerebral lesion. The region of the cranial nerve nuclei, he says, would most probably be the seat of the trouble, and the lesion we must suppose to be irritative in character. Many facts in the clinical history of these cases would speak against the latter view. The fact that most of these children are vivacious and intelligent, and tend in a comparatively short time to make a spontaneous recovery would cause us to doubt the existence of a central lesion. And, again, nystagmus of central origin is accompanied by a train of other symptoms which have not been observed in the cases of spasmus nutans.

Caille[12] believed that the movements of the head were caused by the effort of visual fixation on the part of the child. Fixation is difficult on account of the nystagmus. To prove this he showed that if the eyes were closed by the application of a bandage, the head movements ceased. Raudnitz also believes that the head movements are due to the failure of the process of visual fixation. He confirms the experiments of Caille by bandaging one or both eyes, whereupon the head movements cease. But he goes a step farther than his predecessor, in that he attempts to explain the origin of the nystagmus. The nystagmus, he thinks, is caused by the residence of these children in dark and dingy dwellings. In two of his cases he was enabled to show that removal of the patients to light rooms caused the cessation of the entire precess; he also suggests that the disease tends to relapse during the dark seasons of the year, and that not only are the dwellings dark, but also that the children spend the greater part of their time in their rooms and in bed, and that the facilities for artificial lighting are meager. To corroborate his findings he quotes a case recorded in the literature. A child of 9 months was amused by fastening playthings directly above the cradle; in consequence of this the child looked constantly up, and a vertical nystagmus resulted. The playthings were removed and the nystagmus ceased in about two weeks. Magnus[15] observed a child of 10 weeks who was kept in a dark room lighted by a gas lamp on which the child almost constantly fixed its vision. In a short time the child had nystagmus and blepharospasm. It was removed to a light room and prompt recovery took place. Spasmus nutans and nystagmus do not occur every time a child is kept in a dark room. The same is true of miners, of whom it has been shown that only 4 per cent. become afflicted with nystagmus. We conclude that some internal condition of the organism must be sought for in order that the nystagmus may be explained. Rickets being prevalent in a large proportion of cases, it is reasonable to believe that the disease acts by causing weakness of the eye muscles, and a general fatigue of the entire organism. Or there may be some defect in the visual function, or in the dynamics of the muscular arrangements of the eyes, which will permit a certain proportion of cases to become afflicted with nystagmus if the proper external conditions are present.

Prognosis: Spasmus nutans does not offer any danger to life, nor does it in itself visibly affect the general health; these children are usually bright and active; the disease does not exhaust the patient, and in the majority of cases no other nervous symptoms are present. Relapses are not uncommon. The duration of the disease seems to be three or four months on an average. One of Raudnitz's cases lasted twenty months, and the patient suffered a relapse later; the shortest duration in his series was four weeks. Henoch saw patients who were cured in one and two weeks.

Diagnosis: From what has been said concerning the symptomatology of the disease, it would seem that the diagnosis would present no difficulty, but the greatest confusion has prevailed concerning the diagnosis. As has already been stated, cases are described under the head of spasmus nutans, which are in reality cases of salaam spasm or eclampsia nutans. In these nystagmus does not commonly occur, and they terminate in irregular epileptic attacks and paralytic conditions. These children eventually become feeble-minded, and are to be considered as cases of epilepsy with some special cerebral localization.

Cases of congenital juvenile nystagmus which depend on some lesion of the nervous system or some defect or disease of the visual apparatus should be differentiated from the cases of spasmus nutans. Multiple sclerosis, hereditary ataxia, cerebellar tumors are diseases which may be accompanied by nystagmus, and would present little or no difficulty in diagnosis. Raudnitz has seen a case of tubercular meningitis diagnosed as a case of spasmus nutans, because of the nystagmus and of the convulsive movements of the head and extremities.

Treatment: Cases of uncomplicated spasmus nutans tend to make a spontaneous recovery. The condition of the general health should be ascertained, and tonics should be administered if indicated. If the child is rachitic, antirachitic treatment and diet should be instituted. Bromid of soda, either alone or combined with tincture of belladonna, undoubtedly exercises a favorable influence on the course of the disease. Mills[16] suggests the use of one minim of the fluid extract of conium. In view of the theory that the condition is allied to canine chorea, and in the light of the suggestion of H. C. Wood,[11] that quinin has a controlling power over the choreic movements of the dog, Mills suggests that quinin be given in increasing doses to children suffering from this disease.

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DISCUSSION.

Dr. D. R. Brower—I quite agree with Dr. Abt in his deductions. I saw a patient this morning, who belongs to this interesting group of nervous diseases, a child, 5 months old, and presenting in addition to the ordinary symptoms, horizontal nystagmus and spasm of the occipitofrontalis muscle. I believe the child is rachitic. It is of the highest importance that the attention of the profession is called to this class of spasms.

I do not quite agree with Dr. Abt in his reference to the prognosis. These cases may yield spontaneously, but I am in favor of just such vigorous treatment as he later details, and I think these patients need it. These spasms, called by whatever name you please, are due not only to an affection of the spinal accessory nerve, and possibly of the motoroculi, but the cranial nerves generally. These spasms may continue on into adult life when the proper attention is not given them, and the vigorous treatment outlined by the doctor is not instituted. I have a friend, a physician and a very talented man, whose work in life is most seriously crippled by a spasm that began when he was a boy, which compels him to vigorously wink his eyes. A young woman left his office recently, highly insulted, because he winked at her. Gowers relates a case of a clergyman who had a laughing spasm, and whose utility was considerably interfered with for this reason.

I desire to emphasize, particularly, the necessity for searching for the cause of these cases, and the institution of vigorous measures early. I endorse the bromids and the general tonic treatment. The treatment must be vigorous in order not to allow these spasms to become habit spasms. Weir Mitchell, in one of his papers, called this condition "habit chorea." By setting aside the idea of spontaneous recovery, many such cases as I have related may be avoided.

Dr. A. C. Cotton—I wish to commend Dr. Abt for bringing up this subject, and I am surprised that some one has not brought it up before. I wish to emphasize the frequent occurrence of this form of spasm in rachitic children, and refer very briefly to the fact that some of our best observers are inclined to the belief that this condition is due to some remote reflex irritation. I am still old-fashioned enough to believe that teething has something to do with this class of spasms. The majority of clinical observers, who are not theoretic, agree with me that reflex irritation from the abdominal organs during middle life is one of the causes of this disease. I am very glad to see that Dr. Abt retains the term "spasmus nutans," for the reason that Henny described these cases as tending to recover and did not refer to that class which does not tend to recover. This tendency to recover makes this class so widely different from those which tend to idiocy, imbecility and epilepsy that we can not draw the line too sharply, although I agree that the differential diagnosis is not always an easy one. To let them drift along the line which Sachs and others seem to have followed, in discussing spasms about the head and neck, would be erroneous. Spasmus nutans deserves a place in nomenclature. I am inclined to believe that its frequent association with malnutrition, rachitic disease, intestinal disorders and with irritation from teething, would lead us to consider the treatment as being palliative on the one hand, while it should be hygienic and nutritional on the other. I appreciate the justice of Dr. Brower's remarks on the great danger of these cases becoming habit spasms, and radical measures must be instituted to prevent this condition from occurring.

DR. CHARLES H. LODOR—I wish to emphasize Dr. Cotton's statement in regard to nutritional disorders as being causal in relation to spasmus nutans. It seems to me that under this head, treating it as a symptom and not as a disease, are placed three or four disturbances which are very widely separated. Spasmus nutans, as a disease or a symptom, is closely allied to chorea in its causation and symptoms, although its tendency to recover places it among spasmodic motor disturbances in a class by itself. The movements of the head and eyes that tend to Jacksonian epilepsy, rarely tend to recovery, and are rarely differentiated in diagnosis. The movements of spasmus nutans are more or less regular and not very jerky; the rapidity of oscillation may differ. These patients tend to recovery as far as I have been able to observe. Habit spasm rarely occurs in patients as young as those who develop the motor disorder under discussion, but does develop much later in life, and only under conditions in which there is a marked predisposition to nervous disease. Spasmus nutans occurs in children in whom nutritional disorders are predominant, and the disease disappears together with the disappearance of the nutritional disorder.

DR. H. M. LYMAN—I have found very little of a positive nature, in the way of information, in looking over the various books and papers dealing with this subject. From a study of the nature of the movements, and their character, it seems to me that the principal seat of the disease is in the nuclei that are found in the neighborhood of the aqueduct of Sylvius, and even as far as the root of the accessory nerve. The principal feature of these cases seems to be that there are no organic changes, other than those of a nutritive character, and that there is a functional disturbance of the part. In rickets we can easily see how this is brought about, as rickets is a disease of disturbed nutrition, and there is great excitability of the nervous system, and at the same time loss of inhibitory power, on the part of the superior portions of the cerebral structures, to control and regulate these movements. When the condition has passed beyond a mere functional disturbance, when it is due to something more than rickets, such as congenital lack of development, or when due to the occurrence of sclerosis or chronic disseminated inflammations which leave traces behind, then we have the more prominent forms of disease, which last through life. In many instances, doubtless, the early functional disorder met with is merely an evidence of the beginning of the diseased process which will result, and of a permanent destruction of the tissue which will permanently injure the inhibitory power of the brain, and liberate the lower centers from the control of the higher. For this reason we meet these cases most frequently among defective children, whose reflex centers are insufficiently under cerebral control.

Dr. Harold N. Moyer—It is well that we understand that the pathology of this affection is unknown. It belongs to the great group characterized by hyperkinesis. We do not know how these spasms are produced. There is a great variety of them, and we can name a score of different symptoms-complex, all characterized by overaction or spasm of the muscles. If you study them on the score of their fatality or persistence, you find that the prognosis depends on the frequency of the spasms. The greater the number of contractions in a minute, the greater is the tendency to chronicity and fatality. Parkinson's disease, in which the rigidity, and not the tremor, is the most characteristic and most constant symptom, belongs to the same group, presenting overaction of the muscles. Lately, the neuron theory has furnished a most fascinating explanation of the origin of functional paralysis, a movement of the neuron by which the dendrite of the central neuron is separated from the peripheral by an infinitesimal space. I suppose that if we would extend the neuron theory to hyperkinesis we would conclude that this dendrite was elongated and kept up the irritation by furnishing a too close connection. Many of these affections tend to recovery, and many do not. It is probably wise to preserve the distinctions made by Dr. Abt, and although these symptom groups are not clearly defined, we must nevertheless keep them in mind. They are useful from a clinical standpoint. I fancy that there are many degrees of severity, even in this disease, if carefully studied, just as in chorea. Huntington's chorea is as typical as the chorea of Sydenham. It is a disease always attended with insanity, and lasts the patient through life, while Sydenham's chorea naturally tends to recovery. They are identical at the beginning, in their clinical manifestations. This illustrates the varying pathology of states presenting identical symptoms.

Dr. M. L. Goodkind—A brief recital of the history of three sisters, recently observed in the Epileptic Institute at Zurich, will serve to emphasize the radical difference which exists between spasmus nutans and the so-called eclampsia nutans. The father of these girls was a potator, the mother and two younger sisters aged 6 and 9, manifest no evidence of nervous disorder. The three patients, aged respectively 14, 16 and 20, appeared perfectly normal up to their twelfth year, when they began to develop epileptic seizures, gradually increasing dementia, and an incessant nodding movement of the head. In these cases, the age of onset, the absence of nystagmus and seasonal influence, as well as the absence of all evidence of rickets, the progressive character of the malady and its association with dementia, serve to sharply separate it from the condition described by Dr. Abt.

I must take exception to the remarks of the last speaker in any way confusing spasmus nutans with chorea. Here the age, presence of temperature, onset after rheumatism or scarlet fever, tendency to cardiac disease, absence of nystagmus, and the involvement of the extremities, give us an altogether different picture. The same is to be said of the so-called habit spasms.

Dr. I. A. Abt, closing the discussion—We ought not to speak of the condition as habit spasm; it does not belong to this class. Occurring as it does in infants, it seems like going out of the way to force it into this group. As has been brought out in the discussion, nutritional disorders and similar disturbances play an important rôle in the etiology.

COMPARATIVE THERAPEUTIC VALUE OF RECENT ANTISEPTICS IN PEDIATRIC PRACTICE.

BY GUSTAVUS M. BLECH, A.B., M.D.
CHICAGO.

The beneficial results which have been experienced in all branches of surgery since the introduction of antisepsis, have stimulated the clinicians and pathologists to adopt antiseptic medication in the treatment of non-surgical affections. Timidly at first, then bolder and bolder, progressive practitioners, thanks to the advance made by modern chemistry, have commenced to treat microbian diseases with antiseptics. Of late everything seems to be microbian, and every drug heretofore employed empirically is now described as an antiseptic. We must not go too far in either direction. Not every drug is an antiseptic nor is every disease due to a microbe or its toxins. The simple fact that a drug will destroy bacilli or its spores in a test-tube does not necessarily make it an antiseptic, or at least a fit antiseptic for medication of man, especially children. The list of so-called antiseptics praised in literature, advertised in medical journals and recommended by authorities is so large that the general practitioner can not even as much as remember their names. It is therefore no wonder that one is frequently at a loss to know which particular remedy to employ.

It is well known that we have four great official antiseptics: mercury, carbolic acid, iodin and silver. In their official composition they are too toxic to animal cells to be employed internally. Modern chemistry has endeavored, for this reason, to produce derivatives—synthetically—which, while possessing the antiseptic qualities of the official drugs, should be free from the objectionable features of the latter. To a certain extent chemists have succeeded and certain mercurial and phenol preparations are employed with impunity in the treatment of adults. In pediatric practice, however, I have always hesitated to employ them, for I once observed decided ill effects in a child, 3 years old, from but 3 grains of salol, administered in three doses in one day.

For all practical purposes we need four kinds of antiseptics, those which are supposed to act on the respiratory tract, those which act on the gastrointestinal tract, those which affect the urinary apparatus and such as influence the entire organism.

The antiseptic treatment of the urinary tract has heretofore been a failure. All drugs employed for that purpose were nothing else than intestinal antiseptics, and their administration in doses large enough and frequent enough to saturate the kidneys and urine, was, to say the least, an unscientific experiment. Recently, however, urotropin has seemed to be an ideal antiseptic for that purpose, unsurpassed by any other drug of my knowledge. Its value can be established clinically as well as bacteriologically. Decomposed by acid urine into ammonia and formaldehyde, it destroys the bacteria found in the urine in one or two days. In cases of bladder trouble it is valuable because the disinfected urine will not undo any local medication we might employ for the bladder itself.

For diseases of the respiratory tract creosote was considered the only suitable medication. That it is an irritant is well known. Children could not take it and all sorts of emulsions had to be prepared to make the drug palatable. This is overcome by guaiacol carbonate, which is comparatively tasteless, non-irritant and non-toxic. I have given it to children for weeks, and have observed no ill effects whatever. It is very useful in obstinate cases of bronchitis, but is of doubtful value in tuberculosis of the lungs. I have lately had considerable experience with pulmonary tuberculosis, and my opinion can be given but in one straightforward way: there is no drug that will influence the bacillus tuberculosis to any great extent. Murphy's "surgical" cure has proven a total failure. I have seen patients come to my clinic who have had as many as three injections of nitrogen gas, with the results that they got worse. In one case, strange to say, one lung was "collapsed," while the other one revealed a cavity as big as a man's fist. Tuberculosis in its first and second stages can be cured by antitoxic treatment. I have employed injections of tuberculocidin (Kleb's) with astonishing results and am, at this time, inclined to consider it a specific for pulmonary tuberculosis.

"General" antiseptics, to my knowledge, do not exist, unless the various "antitoxic sera" are considered as antiseptics. With carbolic acid and mercury excluded, there remain but two drugs, silver and iodin. The former, in the colloidal preparations employed by Credé, has proved a valuable remedy in certain affections of a surgical character and for meningitis, if applied externally—inunction—but internally has yet to be tested.

Iodin has always been an ideal antiseptic and alterative. Iodoform, since its discovery, has been heralded as a panacea for wounds, ulcers and for certain affections of the stomach. I believe Boinet, in 1840, was the first to call the attention of the profession to the value of iodin as an antiseptic. Reveil, in 1863, showed that it would neutralize the action of viruses and venoms. Jalau de la Croix later maintained that a solution of 1/1000 was sufficient to sterilize all the spores of bacteria. Roger and Davoine have shown it to be effective on the virus of glanders. The most important contributor on this drug, however, was Mosetig-Moorhoff, who described iodoform, if I remember right, as a "God-sent drug." The objectionable features of iodoform, however, are too well known to need any mention here. Chemists have endeavored to produce an ideal iodin preparation, and in my opinion they have succeeded; iodol, aristol, europhen and nosophen are well known products which have become popular. To appreciate the value of these products, clinical tests alone, although perhaps the most valuable to the practitioner, are not altogether definite. Drug nihilists so frequently sneer at our deductions from personal observations, shrugging their shoulders with a sarcastic smile and alluding to *vis medicatrix naturæ* and to "getting well in spite of medical treatment." While such sophisms deserve no serious attention, there is a shade of truth in them. Neither do test-tube experiments suffice. The same drug which kills bacteria and their spores in the laboratory will not always destroy them in the intestinal tract. Animal experiments alone can offer us scientific proof.

Chemical examination of iodol, aristol, europhen and nosophen shows that the last-named drug is the least toxic, or, correctly speaking, absolutely harmless. Aside from certain animal experiments made at the university of Bonn, where nosophen and its sodium salt, antinosin, the latter having the distinguishing feature of being readily soluble—were injected hypodermically, the chemical reaction which takes place when these iodin preparations are introduced into the animal organism, explains the non-toxicity of nosophen and antinosin. As is well known, iodoform and the other preparations mentioned, when introduced into the system liberate nascent iodin. Antinosin and nosophen, as has been proven to satisfaction by Professor Binz and Professor Zuntz, of Berlin, however, can be found in an unaltered condition in the excretions. The so-called iodoform intoxication depending entirely on this liberation of nascent iodin, nosophen and antinosin are non-toxic.

Nosophen, its sodium salt—antinosin—and its bismuth salt, known as eudoxin, are odorless.

Aqueous solutions of antinosin have been applied by me to the inflamed mucous membrane of the nose and throat of small children, again and again, and I have noticed no complaint. Oculists of note use it now in solutions as strong as 2.5 per cent., as an antiseptic lotion. This substantiates the claim that antinosin is non-irritant.

The skin of children is not only more delicate but capable of greater absorption than that of adults. Nosophen dusted over forty wounds and ulcers on children showed, after three days, not the least irritation, healing taking place by first intention. A few years ago, when employing dermatol, aristol, and iodol, such results were not obtained, though the same care was exercised then as now.

If nosophen has received any criticism at all it has been to the effect that it forms a crust too quickly, thus retaining secretion. Where such is undesirable it is advisable to add 25 per cent. of boric acid to a given quantity of nosophen. As an ointment—10 per cent.—it has proved of great value to me as an application in cases of eczema, intertrigo, ulcers of the leg, etc.

Antinosin is now used exclusively in my clinic for the disinfection of the nasal passages and to wash out discharging ears, particularly when due to scrofulosis, also in the obstinate forms of follicular tonsillitis, angina and as a local spray in diphtheria, croup, etc. This drug forms an excellent adjuvant in the treatment of tuberculosis. Regarding the strength of solutions, I use them from .25 up to 1 per cent. in children.

Eudoxin, the bismuth salt of nosophen, has proven an excellent drug in the treatment of all forms of infantile diarrhea. It has arrested a profuse diarrhea in a girl aged 13, in twenty-four hours, in doses of 5 grains every three hours, after such remedies as salol, bismuth and Dover's powder failed to check it. It was a case accompanying acute pulmonary tuberculosis. I have reported the case in full in an article headed "Eudoxin in Pediatric Practice."

On reaching the acid stomach, the bismuth contained in eudoxin becomes separated from it and stable bismuth compounds are formed, by the gastric juice, which exert a favorable action on diseased conditions of the stomach. The nosophen contained in eudoxin passes unaltered through the stomach, but during absorption in the alkaline intestine it is changed into its sodium salt, namely antinosin, this being held in solution, and acting as a disinfectant on the bacilli and their toxins found in the intestinal tract. In two cases of typhoid fever, the only ones I had occasion to see, the stools were soon rendered aseptic. If experience in adults can be here considered at all, I may add four similar observations on adults.

DISCUSSION.

DR. EDWIN ROSENTHAL, Philadelphia—This comes to us in the nature of an eye-opener, for there are many things therein that are new. Regarding salol, I have always been led to believe that it leaves the stomach unchanged, and the quantity producing collapse is contrary to my experience. I have often given from one to two grams daily, without an ill effect. So also for eudoxin, beta-naphtol bismuth—known as orphal—and other of the newer remedies, our knowledge depends mostly on the experiments as given to us by manufacturers. Such experiments as Dr. Blech are of much importance and value. It has never occurred to me that the decomposition of these remedies was otherwise than what the manufacturers said.

DR. C. G. SLAGLE, Minneapolis, Minn.—In regard to antiseptic therapy I would say that of the hundred or more antiseptic remedies given internally there are three that are of much importance, in my opinion, viz., calomel, sulphur and sulphite of soda.

DR. J. A. WORK, Elkhart, Ind.—Since the researches in bacteriology have brought us so much knowledge of the causes of disease, I am reminded of treatment twenty or more years ago in the West. The alkaloids of cinchona were at that time used for almost everything, and I am satisfied that these are antiseptic in their action, and that they produce very beneficial effects on the depraved system in this way. They destroy the germs of disease. The old teaching was to "cinchonize" the patient. By this it was meant that enough cinchona should be introduced into the system to thoroughly destroy the germs of disease there present. This is another way of saying that the patient is thoroughly under the influence of this powerful antiseptic. I think the same remark applies to the other remedies referred to in this paper. Dr. Woodbridge's treatment of typhoid fever carries out the same principle. The cinchona preparations have the advantage of being both useful and harmless.

DR. A. C. COTTON, Chicago—I feel as though I should express my gratification at the able treatment by Dr. Blech of this extremely interesting subject. Enough has been said in that brief paper to fill a volume. He has necessarily left out a great many details. Like Dr. Slagle, I have not made extensive use of the newer intestinal antiseptics. The summer before last I used eudoxin a little, and last summer I employed it almost as freely as the other remedies combined. I think this coming one I shall use it still more frequently, for I like its action. I shall probably not live long enough to get rid of my prejudice in favor of the mild chlorid of mercury as an intestinal antiseptic. It has stood the test in all of our excursions along the newer lines of intestinal antisepsis, and we are coming back again and again to the old-fashioned calomel. The earlier preparations of iodin have given way because they did not quite fill the requirements—they had objectionable features. If eudoxin will stand the test, and prove to be innocuous, it will be an invaluable agent. I have found guaiacol a very valuable remedy, both locally and internally. I have not used nosophen very much for the treatment of the nose and throat. If there is anything which we specially need it is an antiseptic or bactericide for the local applications about the mucosa of the upper respiratory tract. Liquid guaiacol has served a good purpose in my hands in its application to the tonsil, and I still continue to use the carbonate of guaiacol internally.

DR. G. M. BLECH—I have no objection to the use of calomel, sulphur or sulphite of soda, but I do not believe in using any drug empirically. I do not believe in blindly following the statements of so-called authorities; we should determine the truth for ourselves. In this enlightened century it has been again and again stated that the practice of medicine is a mass of speculations. I hold that by means of the microscope and by physical diagnosis we have reached the stage when medicine is rapidly becoming almost as exact as mathematics itself. We have the methods, and we must use them. The question of antiseptics is not a joke. When we put drugs in a test-tube and kill bacteria we perform a useful laboratory experiment, but it is of no further value. The very fact that calomel produces an eliminative effect does not necessarily make it an antiseptic. The mild chlorid of mercury and the sulphite of soda are eliminatives, and by this action prevent auto-intoxication, but they are not necessarily disinfectants. In the nose we have a perfectly non-irritating as well as efficient antiseptic. I must not only make an assertion about a drug but I must be able to prove it by experiments, as for example, on dogs, using other animals as controls. I have done this and have proved positively that nosophen is an antiseptic. There are other good ones but they do not contain as much iodin. They liberate nascent iodin, and have other objectionable features. That eudoxin is not decomposed in the stomach is a false statement, and one which can be easily disproved by any one.

TREATMENT OF SEPTIC CONDITIONS IN CHILDREN.

BY EDWIN ROSENTHAL, M.D.

PHILADELPHIA.

The presence of streptococcus pyogenes as a complication or sequel to many of the diseases of infancy or childhood exerts an influence on the course, duration or character of the disease so far as to give rise to new symptoms, utterly at variance with the initial malady. and significant of a dangerous, if not a fatal, result. As an independent affection the streptococci or the staphylococci are found so very frequently that they have given distinctive diseases.

Under the name "septicemia" is presented that complex disease which has for its origin the entrance of either of these microbes into the circulation, and by it is understood a poisoned blood. The term was originally employed by Koch for a condition of microbic blood infection, in which the microbes multiply in the blood, and cause a rapidly fatal disease. The true name of this infection might be termed "strepto-infection" or "strepto-septicemia," or in the language of the bacteriologist, "streptomycosis." Whether the disease be a primary one, or whether it be a complication of, or a sequel to, another disease, this fact always remains: the strepto-infection is at first essentially a local disease; it is later that it becomes a blood infection.

The knowledge of its origin, thus shown, exerts an influence on the treatment, and it makes little difference whether the septic condition be a disease primarily, or a grave complication. The chief and certain rule is prophylaxis.

As a primary disease we may meet with septicemia in the new-born as well as in the older children, and as it is an infectious disease all the rules that govern such affections must be implied.

As the medical treatment, by which I mean the modern methods of combating sepsis, depends essentially on a true knowledge of the cause, it is necessary to make the diagnosis early and with the assistance of one who can make a bacteriologic test. As, however, it is not in the power of all to obtain a bacteriologic diagnosis, I will briefly summarize the clinical varieties of septic diseases that may be termed primary, whilst the same manifestations may hold good as a secondary sequel of the various infectious conditions.

The most frequent cases met with are in the new-born, and we meet them as follows:

Omphalitis: inflammation of the umbilicus, and cellulitis of the abdominal wall in the immediate neighborhood.

Inflammation of the umbilical vessels: in this condition, peritonitis, suppuration of the joints, erysipelas, multiple abscesses of the cellular tissue, sometimes suppurative parotitis, and atelectasis are common; pneumonia is also a common complication.

Peritonitis: this is the most frequent pathologic processes in pyemic conditions, and is often the cause of death.

Pneumonia: the most common form is the pleuro-pneumonia.

Pericarditis: rare and usually associated with pleurisy.

Endocarditis: this is very rare; Hirst reported a case.

Parotitis: I have seen this in an infant 4 days old; the mother was also so affected.

Meningitis: this is suggestive of injury during parturition.

Gastro-enteritis.

Pseudomembranous inflammation of the throat: this is not so rare, as instances have been reported by many; I have seen three cases, and in two I have seen membranous inflammation following on the operation of circumcision; in children 9 and 10 days old.

Osteomyelitis: when the septic condition has existed for some time, this may occur.

Joint suppuration: this is the same as in older people.

Abscess in the cellular tissue: this is the most frequently met with, and generally ends favorably.

Erysipelas: this, the cause of cellular abscesses, is met with in almost all cases of septic infection; not alone found in the umbilicus and neighboring tissues, but independently elsewhere, notably on the genitalia, simulating to a great extent syphilis congenitalis, and causing, in many instances, death by the swollen tissues pressing on the urethra and mechanically preventing urination, resulting in uremia and death. In the male I have seen circumcision a necessity, whilst in the female I have seen death resulting from the urinary infiltration following ulcerative action.

Septicemia as a secondary disease is most frequently found as a complication in diphtheria and scarlet fever, whilst no infectious disease can be said to be exempt. Whether the sepsis be a primary or secondary disease, the following treatment may be said to give promise of better results than any heretofore pursued.

We may divide the treatment into local and constitutional, and we may add that the earlier in the case it is begun, the more certain the result.

Local Treatment.—This is generally following the rules prescribed under the principles of surgery. Pus, when found, must be at once removed. Asepsis in the first place, and antisepsis later, is the only safe and certain rule to follow. After this, whatever the indications be, they should be treated. For a beginning cellulitis use lead water and laudanum; in further advanced states, an antiseptic poultice. For erysipelatous inflammation I have always found a 30 per cent. ichthyol ointment, with lanolin and cosmolin as a vehicle, and oil of gaultheria, in the following proportions, to be good.

℞.	Ichthyol	10
	Lanolin	15
	Cosmolin	5
	Ol. gaultheria	1

Misce et Signe. Apply locally.

For other manifestations of the disease, such local applications as are most desirable, or which are more familiar to the physician—as the wet-pack for the pneumonia, etc.—should be used.

Constitutional Treatment.—This is the early and free use of the antistreptococcic serum. The same rules as are given for the use of the diphtheria antitoxin hold good with this serum. The manner of its use is similar. The quantity chosen for the case is injected hypodermically. The method is as follows: The side of the loins or chest is cleansed with alcohol soaked on corrosive cotton or gauze, and after the injection the aperture made by the needle is hermetically sealed with iodoform-collodion. The method of its use is different from the antitoxin. Where in the antitoxin the minimum quantity is first injected, followed by proportionately increasing doses, in the antistreptococcic serum a large initial dose is first injected, followed by the same dose or a lesser amount. The time to give the injection is also different. In the antitoxin any time will be the same. In the serum; early in the day, or when the temperature begins to rise, has been the time found best. As in antitoxin, so with the antistreptococcic serum; any quantity can be administered, as it has been found wholly free from any dangerous consequences. The quantity given as a commencing dose is 10 c.c. This I have given to an infant suffering from erysipelas, and this dose I have repeated in the same infant—aged 7 months—three times, and now record a cure. Larger quantities than this have been recorded, and in one case of septic pneumonia—the streptococcus having been found in the sputum—35 c.c. has been administered, with a record of recovery. The temperature should be the guide for the repetition of the dose.

If after an injection, the fever should recur, whether it be on the same day, or one, two or three days following, the serum should be given, and always at the time when the fever begins to rise. There is no reaction from its use, and if the action be favorable, there will be a decline in the temperature and pulse-rate, and they will remain at normal. This decline may be quite rapid, or it may only follow after a second or third injection, but most generally—if the remedy be used early enough—the normal temperature is reached on the third day.

The cases most suitable to the use of the serum are those which are primarily streptococcic, and in those uncomplicated and before there be destruction of tissue. When clinical evidence of infection exists, and the bacteriologic examination proves the cause, the serum should be used at once, for then it will not only cure the beginning disease, but will prevent any sequel, as suppuration and the like. Where the infection is a complication to another disease, as scarlet fever or diphtheria, the serum is indicated, and its use does not forbid the proper collateral treatment, which is always in order. In puerperal cases, the efficacy of the serum is most marked. As here we have early clinical evidences of this specific infection, we can more promptly apply the remedy, even before the bacteriologic tests. Therefore, in these cases I should advise the early and free use of the serum, being certain, by experience, of its favorable results. Preventive medicine, however, is the rule, and our means should be directed to prevent the disease, and also for this purpose as an immunizing agent, this serum is indicated, and its action has frequently been proved by its use in surgical operation, an immunizing dose of 5 c.c. being injected previous to the operation, with the most gratifying results. Especially has this been proved in operations on the throat, tongue or mouth, so that in those diseases of infancy which have their site in the throat or mouth, such as post-pharyngeal abscesses or the like, the diagnosis of which is so well understood, I have often given the serum with most gratifying results. Concluding, I would advise its use in all suspected cases of septic infection, and as it is so harmless, I would use it as an immunizing agent in those cases, the sequel of which may possibly be a septicemia.

DISCUSSION.

Dr. Dillon Brown, New York City—I am surprised to find that Dr. Rosenthal has such confidence in antistreptococcus serum. It does not seem to be possible that an antitoxic serum can be of benefit in this class of patients, for there is present in these cases not only a toxic poisoning due to the streptococci, but the streptococci themselves are in the blood. Under such conditions it seems to me impossible to cure streptococcus infection by antitoxins made according to the present theory of serum therapy.

Dr. G. M Blech, Chicago—With reference to antistreptococcus serum made by Parke, Davis & Co., with one exception I have seen very favorable results from it, and it has been my sheet-anchor in the treatment of streptococcus infection. Reliable authorities have reported many cases which would have apparently proved fatal without the treatment, and in which the temperature rapidly sunk after the first injection, and reached normal after the second one. That this sudden fall does occasionally take place in cases of streptococcus infection can not be denied, but it does not materially affect the argument. Where death follows in spite of the injection, I believe the infection is a mixed one, and that the staphylococci and other bacteria are to be held responsible for the fatal ending.

Dr. Rosa Engelmann, Chicago—As to the efficiency of streptococcus serum, I can not speak personally from a large experience, but it has seemed to be useful in a few instances. From the literature of the subject, I infer that its therapeutic value is questionable by reason of the great variety of the streptococci. It is not probable that the serum obtained from the streptococcus of pus will prove useful in all cases. The necessity of using immunizing doses of the serum seems to be rather a reflection on the surgeon. In reply to another gentleman I would say that in diphtheria we do not find the bacilli in the blood, but simply the toxins, whereas in streptococcus infection the streptococci themselves are in the blood.

DR. A. C. COTTON, Chicago—For a century we have been practicing medicine along lines we can not demonstrate, and now, just as the time arrived when we could demonstrate, by *a priori* reasoning, the theory on which we administer a remedy, the profession rose up and demanded the most explicit demonstration ever called for or thought of. Had we yielded to that, diphtheria antitoxin would have been choked off in its inception. You remember the experiment with Koch's tuberculin. Fortunately we had a little patience, so that finally many of us were convinced, in spite of our prejudices, and against our will, that the most powerful therapeutic agent ever introduced for the prevention and cure of disease had been placed at our disposal, i. e., the antitoxin of diphtheria. Now, let us have a little patience until it has been demonstrated that absolute harm comes from the injection of the antistreptococcus serum. I believe it is the duty of every physician, in the present status of our knowledge, to use this serum in every case that seems appropriate, and we should not be held strictly to account if we can not demonstrate the utility of each dose. There are records accumulating all over the world which show that the tendency is toward the use of antitoxin treatment in streptococcus septicemia. If the epidemic that we have just passed through in Chicago is resumed, I expect to use twice as much of the serum as I did last winter.

DR. E. ROSENTHAL, Philadelphia—The remarks of Dr. Dillon Brown are true in certain respects. In some cases of streptococcus infection, I have seen the cocci in the blood, and in the pus from the wounds, yet after three or four months the patients have recovered under the use of the serum. What influence the serum has, if any, may be questioned. In such cases as described by Dr. Brown, the serum can do us little good; but, there is no contraindication to its use. And whilst the objections are well known to us, they are the same as with the diphtheria antitoxin. With the antitoxin, we have been taught, its use on the fifth day is valueless, because the blood is already poisoned, and this does not cure the results but prevents them. In a case of a well-known obstetrician of Philadelphia, the serum was used, when the cocci were found in the blood, and too late to be of much avail. There are three kinds of serum in the market: one made by Marmorek, one by Professor Biggs of the New York Board of Health, and one by Parke, Davis & Co. Most of my successful work was done with the latter. A great deal depends on the kind of remedy used. If we use a serum of proper quality, we will get good results, but if we use any kind of serum, we will soon find ourselves rejecting all kinds of serum.

With 10 c.c. of the third make of serum in cases of puerperal septicemia, or in septicemia of children—as erysipelas—you will get an amelioration of the symptoms, and an early cure. After the symptoms lessen, you may employ the usual remedies to restore health. Surgical cases were the first recorded, both as to curative uses and as immunizing agents. Operations on the tongue and mouth were almost invariably followed by septic pneumonia, but where the immunizing doses were used, pneumonia was wholly unknown after such operations. I think Dr. Cotton speaks truly and to the point, regarding serum therapy.

MAY NOT GONORRHEAL VULVOVAGINITIS BE ACQUIRED BY CHILDREN INDIRECTLY?

BY CHARLES O'DONOVAN, M.D.

CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE BALTIMORE MEDICAL COLLEGE.

BALTIMORE, MD.

Bacteriologists who have worked with the gonococcus of Neisser insist that it is an organism that is very refractory to cultivation outside of the living body, and that when it is removed from its usual habitat it dies very promptly. Immersion of gonorrheal pus in water, drying of the pus, or even simple exposure to air is said by some authorities to be sufficient to destroy the life of the gonococcus. Accepting the theory that the infectious nature of the discharge depends entirely on the specific organism, it would appear from this that it would be next to impossible to convey gonorrhea from one person to another in any way except by direct contact of surfaces subject to its invasion. This opinion might easily cause very serious complications from a medicolegal standpoint, and lead to the conviction of innocent parties accused of criminal procedure. The teaching of the laboratory in this matter must be tested by practical experience, in which modifying circumstances frequently present themselves. It may be readily recalled, by reading of books not very old, how the vaginitis of young girls and female children occasioned much discussion until the discovery of Neisser settled once for all, the identity of this disease with ordinary gonorrhea, in the great majority of cases. The microscope now renders the diagnosis easy, enabling one to appreciate promptly the seriousness of the disease, and to use the proper remedies. At first this made matters very satisfactory; the cases were accepted as specific, the contagion having been conveyed in an innocent manner to the children through dirty linen or a soiled basin that had in some way become contaminated. It was disagreeable to think that the disease could be so easily spread, but it was easier than to believe that the great number of children with vulvovaginitis had been subjected to attempted coitus. This happy state of things has been destroyed by the bacteriologist, who announces from the laboratory that it is almost impossible to make the gonococcus live outside of its usual habitat.

We can not deny the gonorrheal nature of the prevailing infantile vaginitis, notwithstanding the pseudogonococcus which is offered as a loophole, for every case that has been examined at our dispensary has shown the presence of the Neisser organism, and has, in addition, presented all the other symptoms by which gonorrhea is recognized. Our material is drawn almost entirely from the negro population, among whom gonorrhea is extremely prevalent, and the likelihood of contagion is great. But some of our patients are so young, children of 2 or 3 years, that it seems impossible to accept direct contact as the means of infection. It is clearly a difficult matter to trace the mode of spreading the disease under such circumstances, but when the disorder attacks several girls in a family, whose father is known to have gonorrhea, and the history of a common use of washrags and towels can be obtained, with the denial by the father of any improper contact, it seems plausible, even allowing for the unreliability of such testimony, to credit the disease to an indirect rather than to a direct infection.

Observation of our cases after admission to the wards of the hospital should help very materially in determining the methods of probable infection. We notice that the children play together, as in any nursery, with the greatest carelessness and freedom from restraint, constantly handling the same objects, whether time-worn toys or the furniture of the room, in a way that must necessarily transfer from the hands of one to those of others any filth that might adhere to them. This has appeared so likely to happen that we have ordered that the girls who suffer from vulvovaginitis shall be compelled to wear napkins that must be frequently changed and properly disinfected; when they must be removed for defecation or urination, it is the duty of the nurse to see that they are properly readjusted, and in this way we hope to reduce to a minimum the likelihood of the child's fingers becoming contaminated and so spreading the contagion. So far we have never seen any evidence of it, but from the gregarious habits of the children in the ward, we are in constant apprehension.

These cases are extremely refractory to treat. When they first come into the ward they make very rapid improvement, up to a certain point, but the slight discharge that persists still contains quantities of gonococci. Simple cleanliness, with frequent washing of the parts, brings about the decrease of discharge, but with no effect on its virulence; when it becomes evident that stronger treatment is required we use a solution of hydrogen peroxid diluted one-third or one-half, and after this cleansing agent a solution of bichlorid of mercury varying from 1 to 5000 up to 1 to 2000. Though the disease persists, the children seem to suffer little inconvenience after the acute stage has passed. Their comfort is perfect, and the abnormal congestion of the parts disappears almost entirely, but the pus gathers persistently about the labia and around the meatus; the vagina seems but little affected. With this we have noticed such irritation of the parts as induces the child often to rub or scratch about the vulva, leading to almost certain contamination of the fingers or nails, whence, we believe, the infection is carried indirectly, by means of toys or otherwise, to the vulva of another child. Or in the families of uncleanly individuals, we consider it quite possible for the infection to follow the use of towels, or from an uninfected child wearing the clothes of one suffering from gonorrhea.

10 East Read St.

DRY ANTITOXIN: A CLINICAL STUDY OF ITS VALUE IN DIPHTHERIA.

BY LOUIS FISCHER, M.D.

NEW YORK CITY.

Description.—It is a golden yellow crystalline substance quite readily soluble in sterilized water and containing no foreign antiseptic. Liquid antitoxin is preserved with carbolic acid, and also trikresol; other preparations, like camphor, have been added as a preserving agent. This new solid diphtheria remedy is tested for its activity and also for the presence of germs, by the government.

Directions for Use.—The remedy must be dissolved immediately before use, by adding from 1 to 4 c.c. of cold sterilized water, by means of a sterilized pipette, to the bottle of antitoxin. The solid serum dissolves slowly; the greatest caution must be used not to contaminate the solid serum, as it contains no antiseptic, nor should any be added to the water used for dissolving the serum. Bottles containing 1000 units constituted a healing dose, and in a very malignant case it was necessary to repeat this dose in twenty-four hours. The antitoxin, after the water is added and thoroughly dissolved, is then injected into the intra-scapular region or in the buttocks or the thighs or in the loose connected tissue of the abdomen or even the chest. The same aseptic precautions that would be used in giving an ordinary hypodermic injection must be used while injecting this dissolved crystalline antitoxin. Between 2 and 3 c.c. of sterile water was sufficient to dissolve the contents of a bottle containing 1000 units. It is advisable to keep the bottles containing the serum in a cool, dark place.

The following cases will serve to illustrate the value of the dry antitoxin:

CASE 1.—*Diphtheria:* Rudolph D., 7 years old, was born in the United States.

Family history: His mother has suffered from several attacks of "diphtheria." His father died of heart failure; other relatives negative.

Mode of life: Tenement; two rooms; two persons, third floor; cleanliness exceptional; ventilation fair; goes to day school and to a kindergarten in the afternoon. Scarlatina in the same house; used to board with that family until scarlatina broke out.

Previous history: He has had no infectious disease, but bronchitis—(broncho-pneumonia?)—four years ago.

Present history: The probable exciting cause is exposure in school; contributing cause anemia, large tonsils, lymphatic diathesis. The disease began gradually, April 11, 1899, with fever, loss of appetite, malaise, nausea, vomiting; pains in the epigastrium, of a colicky nature(?), tickling in the throat, salivation, difficulty on swallowing, drowsiness and peevishness. Dr. Saxe saw the patient on the 12th; the chief complaint was feverishness and a pain in the epigastrium.

Examination, April 12: An anemic child, small for its age, delicate skeleton, pale skin, thin musculature. The skin is slightly moist and hot; there is no trace of an eruption. The temperature (mouth) is 102.4 F. at 3 p.m., the pulse 120, regular, full; the respiration 36, but there is no dyspnea and no laryngeal stenosis; no hoarseness. The tongue is coated and dry. There is no discharge from the nose. The conjunctivæ are injected. The head feels hot. There are a pair of enlarged glands on the right side of the neck at about the middle of the anterior border of the sternomastoid muscle. They are hard, mobile, tender, and distant from each other. The breath is foul-smelling. The tonsils are slightly enlarged and covered with patches of false membrane, three or four on each side. The patches are of a dirty-gray color, with thick, darker, greenish edges. They are hard to dislodge, and the mucous membrane beneath them bleeds easily. There is not much peritonsillar inflammation, though some redness of the arch and pharynx is present.

A serum-agar culture-tube was inoculated with some of the exudation from the left tonsil, the swab removing a bit of membrane and producing bleeding. The culture was grown for twenty-four hours at 37.5 C. The resulting growth proved to contain Klebs-Loeffler bacilli (Report of N. Y. Health Dept., No. 2560). There is no cough, no pain in the chest, and examination of the lungs and heart is negative. The abdomen is slightly distended, there is exaggerated tympany over the stomach and the descending colon. The fæces are dark and hard, there is constipation. The urine is of a sp. gr. of 1025, is clear, dark-brown, with no sediment, scanty in quantity, acid in reaction, and there is a trace of albumin.

Diagnosis: Diphtheria.

Prognosis: A mebium case with fair chances, but look out for sequelæ.

Treatment: 1. Bed; isolation; renew clothing as necessary and boil after removing; temperature of room; ventilation; care of skin; prevention of chills and draughts; cold compress to the throat. 2. Diet: cold milk, mineral waters, lemonade, cracked ice, ice-cream, scraped beef. 3. Injection of 1000 units of antitoxin (dry) obtained from Dr. Fischer at 6 p.m. on April 12, into the skin of the right hpyochondriac region; temperature at injection, 102.6 F.; pulse 120; respiration 36. 4. Potassii chloratis 2.0; tr. ferri chloridi 8.0; glycerini 15.0; aquæ ad. 60.0. A teaspoonful every three hours in water. Gargle with normal salt solution every hour. Calomel tablets, 1/10 gr. t.i.d.

April 13, 12 m.: The temperature is 102 F., the respiration 30 and the pulse 120. The child is less pale. There is still pain in the throat, anorexia and difficulty in swallowing. The pain in the epigastrium is gone. There has been no more vomiting, the bowels are regular, the urine still scanty, sp. gr. 1023 and a trace of albumin. The child is less drowsy and is quiet. The tongue is cleaner. The cervical glands are slightly larger than on the previous day. There is no change in the appearance of the membrane. The lungs and heart are normal.

April 14, 12 m.: The temperature is 100.2 F., the pulse 96 and the respiration 24. The quantity of the urine is greater the urine not so dark, and the sp. gr. 1024. There is still a trace of albumin perceptible with the simple heat and nitric acid test. The appetite is good, the skin feels cooler, the salivation is gone and the child breathes through the nose at night. The tonsils are smaller and the membrane is beginning to disappear on both sides, especially the left. The child is bright and wants to get up. The bowels are regular, the breath less odorous.

April 15: The temperature is 99, the pulse 90, the respiration 24. The urine is clear, light yellow, sp. gr. 1020, contains no albumin.

April 16: The temperature is 98.6 F., the pulse 84, the respiration 20, and general condition good.

April 22: There are no more bacilli in the throat. The child was kept confined to its room for three weeks. Strychnin 1/60 gr. t.i.d., was continued during all this time.

May 20: The child's heart is normal; there are no complications.

CASE 2.—Lizzie G. was born in the United States.

Family history: This was negative. Her sister had diphtheria last year.

Habits and surroundings: Attends public school; tenement, two rooms, two adults, four children, third floor. Cleanliness leaves a great deal to be desired. Ventilation bad. Two windows south.

Previous history: No contagious diseases. Inclined to tonsillar inflammation. Adenoids.

Present history.—The source of infection is probably to be sought in school or Sundayschool. Lymphatic diathesis. The disease began on April 21, when the child seemed feverish, restless, and complained of sore throat. A physician who was consulted declared that she was suffering from "catarrh." The mother says she noticed some white spots in the child's throat. There was anorexia, cough and difficulty in swallowing. During the following night the cough assumed a croupy, brassy character and in the morning the mother found that the child was breathing rapidly and noisily, and that the fever, sore throat, headache and nausea were intensified. There was considerable prostration. In the afternoon I saw the case, with my assistant, Dr. Saxe; the child presented a considerable degree of laryngeal stenosis, so that we warned the mother that intubation would be necessary.

Examination: An enemic child, fairly well nourished, but with feeble musculature. The skin is pale, hot and dry. There is no eruption. Herpes labialis. The bowels regular; no vomiting. Temperature 102 F., pulse 108, respiration 48, shallow and noisy. The intercostal spaces and the suprasternal notch and sternocostal angle are depressed at each inspiration. There is a croupy cough. The tongue is coated and moist. There is a slight nasal discharge. The conjunctivæ are normal. There are enlarged glands on both sides of the neck, which are hard, mobile and not painful to the touch. The tonsils, arch of the palate and posterior wall of the pharynx show the presence of yellowish-gray spots of false membrane. They are exceedingly difficult to dislodge. The surrounding mucosa is diffusely inflamed. A culture on serum-agar was planted with some of the exudation, and within twenty-four hours sufficient growth appeared on its surface. The bacteriologist reported the presence of true Klebs-Loeffler bacilli. (Report N. Y. Health Board, No. 2813.)

There was no pain in the chest, but distinct bronchial fremitus on palpation. Auscultation is extremely difficult on account of the laryngeal stenosis, and revealed sibilant and sonorous breathing, subcrepitant râles and pulmonary vocal resonance;

percussion sounds were normal. The heart action was regular, and no murmurs. The abdomen was negative. The feces are of a normal color and consistency. The urine showed a sp. gr. of 1022, no albumin, no casts, average quantity, reaction acid, color normal.

Diagnosis: Laryngeal diphtheria. Tonsillar and pharyngeal diphtheria.

Prognosiss Grave, on account of the amount of laryngeal stenosis.

Treatment: On the same day, an hour after the first visit, Dr. Saxe injected 1500 units of the dry antitoxin of Behring into the right hypochondriac region. Temperature at injection, 102.4 F., pulse 120, respiration 48. Calomel tablets, 0.015 t. i. d. Inunctions of 25 per cent. mercurial ointment to the neck. The same general management and diet as in the preceding case. At 8:30 p.m., on the same day, I found the child in extreme asphyxia, and immediately intubated. The relief was instantaneous.

April 23: On the following morning the child's respiration was perfectly normal, being at the rate of 24 per minute. The temperature was 101.2 F., the pulse 90 and the general condition considerably improved. There was still considerable cough and stringy mucus was expectorated. The child was given a mixture containing 2 grains of ammonium carbonate, one drop of the tincture of strophanthus, and 20 minims of syrup of wild cherry in a teaspoonful of water. The bowels were regular. The other medication was continued in the same way. No more antitoxin was given.

April 24: The child's breathing is normal and there is no sound of an obstruction, as there often is in intubated cases. The membranes disappeared from pharynx, tonsils and palate. The examination of the heart and chest is negative. The herpes labialis and the swollen cervical glands are beginning to disappear. The temperature is 100:6 F., the pulse 84 and the respiration 24. The child sleeps well at night and has more appetite.

April 25: The general condition is very good. The bacilli have disappeared from the throat, as attested by bacteriologic examination. The temperature is 100.2 F., the respiration and pulse the same as on the preceding day.

April 26: The child's cough is less frequent and the breathing is normal. The appetite is very good, the tongue clean and the cervical glands almost normal. The same medication is continued. The temperature is 99, the pulse 84, and the respiration 24.

April 27: The child was extubated—on the fifth day. The tube was coated with lime salts, but its lumen was free. There was no dyspnea and the child continued to breathe easily after

the extubation. The temperature was 98.6 F., the general condition very good.

In this case no sequelæ were observed, though on the day after the intubation the child looked as if it were developing a broncho-pneumonia.

Case 3.—Isadora Sadie C., aged 8 years, complained of sore throat for two days. Examination of throat shows both tonsils much enlarged and the crypts widely open. On the upper part of the left tonsil there is a thin whitish membrane. Temperature 98.8 F. Heart's action regular. There is a slight enlargement of the glands of the neck, especially marked on the left side, and sonorous râles on the right side; patient has slight cough. Antitoxin, 1000 units, injected into the intercapsular region. Culture of throat taken and sent to board of health.

Case 4.—Katie K., aged 7 years.

March 25, 1899: Patient complains of sore throat. Examination shows both tonsils enlarged and covered with thin white membrane. Temperature 99.4 F. Antitoxin, 1000 units, given.

March 26, 1899: Membrane disappearing from tonsils. Only a small patch remaining. Patient complaining of pain in back, due to injection. Slightly constipated. Relieved by castor-oil.

March 28, 1899: Tonsils clear; patient doing well; appetite has returned.

My experience has been limited to five cases, two of these were very malignant, one very severe and two mild. Case 1 was a very severe case of diphtheria. Case 2 a very malignant one, which necessitated intubation, about six hours after first seen. A very important point and one worth noting is that there was no distinct reaction immediately following the injection, nor was there any later in the disease. In the child R. D., the temperature remained stationary, did not rise nor fall on the first day of the injection, but fell by lysis the following day and the succeeding days until the child recovered. This was true in all other cases; the temperature went down slowly by a process of lysis, from the first day of the injection until the final recovery. The pulse behaved similarly to the temperature, the number of beats going down from 120 to 80 in one case after several days of treatment, and in L. G., who necessitated intubation, the pulse went down from 108 to 80 in two days after the intubation. The respiration went down in twenty-four hours from 48 at the time of the intubation to 28 in one day. All five patients recovered without any sequelæ. A noticeable point was that not one of the children complained of pains in the joints following injection. In none of those injected was there an antitoxin rash following the injection of the dry antitoxin. It has frequently been claimed, and by some very good observers, that one of the main reasons for the appearance of an occasional exanthem following the injection of the liquid antitoxin was because the latter contained either trikresol or carbolic acid for its preservation. Some chemists have stated that in some instances where toxic symptoms have been observed, the latter were produced by the small quantity of carbolic acid present in the serum. If this is true, then one of the most objectionable features added to the antitoxin have been removed. Antitoxin is no longer an experiment and therefore, without wishing to overestimate this new product, I feel warranted in advocating its use in every form of diphtheria and more especially in very malignant forms. No more than 2000 units, or the contents of two bottles, each containing 1000 units, was necessary to effect a cure, although a substantial improvement in the disappearance of the membrane in the pharynx and tonsils, in the swelling of the cervical glands, in the lowering of the temperature, and a corresponding decrease in the pulse-rate, and a general brightening-up of the patient's condition was noted the following day in each one of my patients after the use of 1000 units of antitoxin. It is well to again emphasize what I said in the beginning of this paper on the absolute necessity of using the greatest amount of care to keep the hands and the skin of the patient absolutely clean. This applies, however, most especially to the pipette and to the bottle of antitoxin and the water used. If the slightest foreign matter is introduced, and our injection is not given absolutely aseptic, then and then only can some infection take place and interfere with the proper effectiveness of the healing remedy.

In conclusion, I desire to express my sincerest obligations to my two faithful assistants, Dr. Leopold Haas and Dr. George A. Saxe, for their careful treatment of these five cases and for the aid given me with the clinical memoranda.

65 East 90th Street.

SOME THOUGHTS ON PHYSIOLOGIC ELIMINATION IN ALL PATHOLOGIC CONDITIONS.

BY J. A. WORK, M.D.
ELKHART, IND.

In the consideration of our subject, we recognize two great natural forces, viz.: vital and chemical. The former selects and appropriates the latter's resources in constructing and maintaining the human system—the highest order of God's creation. The latter is ever seeking opportunity to claim her own. Thus chemical force is the avowed antagonist of vital force, and has been and ever will be through all human existence. Vital force holds the supremacy in the normal physical organization, which organization we find complete in the healthy child with established physiologic functions. It is said that: "we begin to die, when we begin to live." This proposition is not true. We may as truthfully assert that the blade of grass begins to fade and die when it first peeps through the earth. No, the ordained course of all life, whether vegetable or animal, is first to mature, then decay. During the entire period of vegetative animal life especially, until adolescence, vital force should hold absolute supremacy, and will if environments are altogether favorable. This is Nature's or rather the God of Nature's endowment to every human being; however, very many are deprived of this inherent right, by the iniquities, or perchance ignorance, of the fathers and mothers of preceding generations.

If there is no hereditary weakness or taint, and with the necessary favorable surroundings, a normal maturity will be reached, and during this evolution or transition period and through all subsequent life, until the shades of evening appear, the inevitable attacks of the ever-present chemical force will be averted. Thus the self-evident necessity of training the physical child, in the way he should go.

A sound body is necessary to the existence of a sound mind, and soundness of both mind and body is eminently necessary to a proper moral condition.

The successful physician is conversant with; and capable of treating every department of life. The normal healthy physiologic being is not the one the physician is called on to treat; however, he should be consulted from a prophylactic standpoint in the healthiest cases, so that all the physiologic functions may be maintained, that this healthy condition may be perpetuated as long as possible, even until the system wears out. I assert that such is possible, and especially if it were not human to err.

With intelligent selection of ingesta, physiologic mastication, insalivation, digestion and assimilation, and normal or physiologic elimination is secured by the proper emunctories.

We say such a one is whole, and needs not a physician. Any pathologic condition of the system is a deviation from the normal standard, and all the physiologic functions are disturbed to a greater or less degree. This is disease. We speak of severe and mild attacks, of zymotic diseases; what is the condition in either case? In the former there is a suppressed or imperfect condition of elimination of effete and noxious matters from the system during the incubative, or, if you please, the germinative stage of the disease. Thus the seed, let it be of whatever order, name or nature, multiplies rapidly in this septic condition of the system and the alarming phenomena present. But in the mild cases the septic media is not present during the incubative stage; the emunctories have been in normal condition, have performed their functions well. Thus the small crop of developed something gives the mild form.

We have observed that many persons are immune to disease because of no fertile media in the system sufficient to allow propagation of disease germs. We well remember when a child, being sent to visit with neighbor children, in order to secure a crop of measles, but the enterprise utterly failed, for lack of fertile soil of the nature required to produce the specific disease.

It matters not as to etiology, whether traumatic, zymotic, climatic or accidental, no matter what the origin of disease, physiologic elimination must not be ignored. In surgery, a clean system, externally and internally, brought about by physiologic elimination, is requisite to normal healthy granulations and repair of tissues, with or without proper antiseptic agents. A case to illustrate: Several years since a young man, while out on a hunting expedition in northern Michigan, was lost in the woods, and from cold and hunger nearly perished, though by the best of care his life was saved; however, not without some distressing sequelæ, viz., necrosis and flexed chylosis of the knee, also several abscesses and ulcers of different parts of the body. The system was left in anything but a healthy condition. He appealed to me on his return, to either straighten or amputate the disabled member. I endeavored to straighten, but found that gangrene of the foot was inevitable on account of the meager supply of blood to the lower leg, due to stretching, and consequent reduction of caliber of artery, caused by extension of the leg. Amputation was performed at the lower third of the femur, as an emergent necessity. I employed carbolic acid as antiseptic, and gave all the emunctories a chance to do full duty as to elimination. He had two evacuations of the bowels a day, twelve hours apart. If not secured by natural peristalsis, we prompted by employing pure water enemas. Frequent sponging and friction of the surface of the body, together with warm clothing, secured good elimination by the skin; good pure water for the kidneys, and air for the lungs, and in fourteen days the stump was entirely healed, excepting at angles at the site of ligature; five days later the patient was out on crutches, one-half mile distant from home, visiting neighbors. I claim that physiologic elimination was the *sine qua non* in this case, and it was not a good condition of the system to start out with, at the time of operation, that rendered its termination so favorable.

Further, to illustrate, we will consider typhoid fever the type of zymotic diseases. What is the condition of the system when the disease is developed? If a severe case, the system at the time of inception was in a septic condition, and if a mild attack, the system was less septic. But in a typical case of the disease we find the system surcharged with effete matter, the digestion, and assimilation impaired or entirely suspended. Physiologic elimination is also partially and seriously impaired. To say that toxemia is present in a double sense is not wide of the truth. The septic condition which invites and makes it possible for the specific germs to lodge, develop, and multiply, is sufficient of itself to cause severe disease; but with the addition of the typhoid bacilli, the type is changed to a more severe and dangerous form.

The treatment of such a condition is plain to the intelligent physician. I presume one friend and colaborer, Dr. Woodbridge, would advise employment of the well-known antiseptic treatment. I would have no controversy with the Doctor in the matter, but compromise by employing both eliminative and antiseptic; however the eliminative first, especially in the early stage of the attack. If called late, we may need both.

We all have seen cases of typhoid fever treated in which the medication really harmed the vitality of the patient as much as did the disease. Is it not a fact that, in many cases, the vital force has three, instead of one, antagonists, i. e., sepsis, specific, bacilli, and often medicine or chemicals? Is it rational to engage in deadly combat with an obstinate foe, with toxic chemicals, within the already weakened and depressed vital system? Is it not more rational to first cast out the foe by relieving the system of that septic matter which makes it only possible for the specific disease germs to exist in the body? And if this is accomplished we may not need the aid of the antiseptic. But we will allow the debilitated and depressed system to regain through vital action that which was destroyed by its presence.

Again, the importance of early effective physiologic elimination in all diseases due to or aggravated by climatic or meteorologic influences is very apparent. I am sure we have all had experiences in keeping with this thought, in inflammatory affections caused or excited by the presence of cold or heat or other conditions of atmosphere. For instance, we may refer to the wonderfully beneficent effect of proper early cleansing of the whole system in pneumonia; we may control or even arrest the disease before it goes beyond the congestive stage. Our predecessors in the medical profession employed venesection in acute inflammatory diseases, and in a measure produced the same results we do by elimination and consequent equalization of the circulation. They reduced the vital resources, but we correct the vital resources, and thus they reduced the vitality, but we increase vitality and save time by bringing a more speedy restoration, by virtue of so little loss to the system, by employing means so in harmony with physiologic functions. There is no more blood in the system at the time of the attack of the disease than prior to the attack when the patient was in good health, but there is a lack of blood in some parts, and congestion in other, thus a disturbance of the whole system, which requires correction; and this should be accomplished by the mildest means possible; a knowledge of physiologic elimination suggests the means necessary, especially always as the initiative. I say always, yes, always, when I am called to diphtheria, scarlatina, measles, influenza, puerperal fever, all zymosis, all phlogosis, all cachexia, skin diseases of *all* types. In necrosis of every name, and all unclassified afflictions, I look well to elimination as the initiative procedure. And with all due regard for honest scientific pharmacy, I must say that I do not believe that proprietary medicines, however much I deprecate them, are not the only medicines manufactured with special reference to revenue.

In conclusion I will quote: "Thus treat the *cause* of disease whenever it is possible." Watch always and treat, when requisite, the condition of the patient; especially avoid routine treatment according to the names of diseases. Use no violence in treating self-limited diseases. I believe that a sound theory may be expressed in a single paragraph. Thus, vital optimism is the aggregate tendency of all the forces of the living organism, under the controling influence of life force. However, the best possible results in a given case may, from its conditions and circumstances, fall far short of health. Medicine is thus to favor or supply those conditions which under natural laws allow or promote the best results. In aiming to fulfill this duty the art of healing must always depend, in part, on empiric observation—which every branch of knowledge requires—and in part on inductive science. But in both alike, the physician is or should be "Naturae minister et interpres."

DISCUSSION.

Dr. Ed. E. Mayer, Pittsburg, Pa.—No doubt physiologic elimination is a prominent factor in all diseases, but the writer of the paper just read assumes too much in making it the only factor at play. If we follow his theory we will be apt to disregard the advances that have been made in medical science during the last twenty or thirty years. His paper, if read in the old days of heroic purgation, would probably have been better accepted than it could be to-day. Physiologic elimination has its place, but it is by no means everything. Shall we forget such factors as direct heredity, sexopsychic training, nutrition of the fetus through the mother, attention to educational and dietetic rules, etc.? You all remember the old saying of O. W. Holmes, that we should start to treat the child by treating its grandmother. A proper appreciation of physiologic psychology and physiologic chemistry and its use in training, developing and treating the child will do no more than physiologic elimination. Nor do I see much difference between the vital and chemical forces spoken of. All actions are governed by our vital centers or by vital automatism, whether chemical or not. How then can they be antagonistic? Or perhaps the writer considers the body a seat of constant nihilism?

As to the question of education of children, much harm is being done by our public school system. Indiscriminate education without regulations as to the physical condition or mental strength of the child can only be detrimental to the many and advantageous to but the few. Mental exhaustion is more dangerous than physical exhaustion, and to the former many children are subjected in the stress of daily recitations, examinations, etc. If our children were only required to study according to their individual capacity, and if more time were given in instruction on hygienic, dietetic and sexual matters, by competent persons and not by ignorant "schoolmarms," our children would receive more benefit than could be secured by all methods of physiologic elimination.

Dr. J. A. Work, Elkhart, Ind.—My paper claimed just what the last speaker did, except that vital force and chemical force are not the same. I do not say in the paper that they exist in the body at the same time. Chemical force is every ready to take advantage of vital force. That person who becomes sick, and nigh unto death from whatever cause, is very nearly in the clutches of chemical force, and does finally, if he dies, come into those clutches. After vital force has left the body, chemical takes possession. That is what I meant by speaking of their antagonism. Of the elements composing the human system, the vital force is, therefore, using the chemical elements. As an initiative procedure in all cases I would employ physiologic, not pathologic elimination—just to arouse Nature to her sense of duty.

DIFFERENTIATION BETWEEN THE BULLOUS, VESICULAR AND PUSTULAR ERUPTIONS OF EARLY LIFE.

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Although dermatologists can not invariably make satisfactory distinction between rare forms of bullous affection, or classify them in an acceptable manner, it is usually no difficult matter to distinguish the non-specific from the specific. To this general rule there are a few exceptions. The distinction between syphilitic and non-syphilitic lesions of this character is not so much a matter of form, size, color, and course as it is a question of location, time of appearance and the coincident or antecedent occurrence of other manifestations, often in the nature of unmistakable stigmata. In other words, some definite manifestation of syphilis is almost sure to be, or to have been recently, present to confirm the diagnosis. So far as the chances are concerned of any given bullous, vesicular or pustular eruption in an infant being syphilitic, we must bear in mind that these forms are to be numbered among the rarer manifestations, bullous eruptions occurring as a first manifestation in from 5 to 8 per cent. of cases, while the maculo-papular is seen as the primary eruption in about 50 per cent. These figures, like those of all other statistics, vary greatly according to the source from which they are drawn. If the palms and soles are the chief seat of development, the chances are largely in favor of the specific nature of the lesions.

The concomitant signs of syphilis, to which I have referred as of such aid to us in estimating the significance of clear or purulent bullæ and clear or purulent vesicles, include a peculiar cachectic appearance or dirty-yellowish anemic aspect; an earthy colored tint about the mouth, at times spreading over much of the face. The features are not always pinched or drawn, and it is an error which is at times committed, to teach that the "specific" infant is a thin, shrivelled up marasmic individual with the classic "old woman" appearance.

The majority of hereditary syphilitics are in their early infancy fairly well-nourished, and even plump, while possibly showing marked and at times severe eruptive signs. This necessarily does not apply to the large class born before time, who have a natural difficulty in catching up in their weight to that to which their apparent age entitles them.

There is also an almost never-absent coryza or catarrhal condition of the nasal mucous membranes; a crustiness and oftentimes fissured state of the lips; and a marked tendency to condylomatous formation about the mouth and anus. In older children certain peculiar erosive features of the permanent upper central incisors, deafness, and keratitis are stigmata of inherited syphilis on which we can not now dwell.

The subject, even restricted as I have indicated, remains a very broad one, and, to cover the ground I will attempt to take up the various bullous, vesicular and pustular affections of the skin and point out, as I go along, what are some of the points of differentiation between them and syphilitic manifestations as I have encountered them in practice. In this way I may throw out suggestions which should form the basis for an interesting discussion. In being confronted with an infant presenting vesicular, bullous and pustular lesions, we can often arrive at the decision that it is *not* syphilis, by paying strict attention to those points which will enable us to determine what the affection really is, and avoid the highly undesirable position of treating the patient for a syphilis which does not exist. It is questionable whether it is a greater offense to overlook syphilis or to treat a patient for it who has not the disease. Unfortunately there is an abundance of the real article if it is diligently sought. Having decided that a given eruption is not specific, I do not think specialists in the diseases of children can always tell what the disease really is. I say this because I know that skin specialists can not, although much painstaking investigation is being constantly carried out by them.

A great desideratum in the study of this class of affections is to simplify the classification and nomenclature. I would therefore urge the elimination of all such confusing terms as "syphilitic eczema," "syphilitic pemphigus," "varicella syphilitica," "variola syphilitica," all of which have to do with the subject before us, as well as the use of "syphilitic psoriasis," "syphilitic lichen," "syphilitic acne," and the like. These designations can best be dropped once and for all.

THE VESICULAR SYPHILIDE.

This is among the rarest of the eruptive forms. It is to be distinguished from eczema, which is the disease it most closely resembles, by its slow course and the fact that it persists under the employment of remedies usually efficacious in eczema. There is also an absence of itching, which is in itself one of the most valuable of signs. There is likewise little or no "weeping," the lesions drying and remaining on infiltrated plaques in themselves dry and perhaps shiny or having a glazed appearance and often a waxy look. After the redness has subsided, and no traces of vesiculation are longer present, a dull discoloration and often a pigmentation is left behind, giving a dirty aspect to the skin.

An eczema in the vesicular stage, occurring in a syphilitic infant, may cause confusion for a time, but the individual vesicle of syphilis is much more deeply seated in the skin and retains its integrity as a vesicle much longer than that of eczema. In any event the rarity of vesicular syphilis makes the great preponderance of chance in favor of any given vesicular eruption being non-specific.

THE BULLOUS SYPHILIDES.

Good instances of bullous syphilis, like good Indians, are mostly to be found among the dead. Almost if not quite 80 per cent. of hereditary syphilitic infants, if not born dead, die before completing their third month of life. This number includes most of those showing the bullous or pemphigoid form of eruption. The latter is usually of the congenital variety, occurring at, if not before birth, though I have notes of a case in which it first appeared on the nineteenth day. It is of ephemeral duration, perhaps not lasting more than a few days, presenting from a few to a hundred or more lesions. The color is dull, opaline, yellowish or of somewhat greenish hue, and some bullæ may be hemorrhagic.

In the later stages the contents dry into thick crusts or, in malignant forms, an ulceration (ecthyma) takes place at the seat of the bulla. The location on the palms and soles is characteristic, and it is often there that bullæ first become noticeable. In some instances there is a tendency to confluence, and concomitant peri-anal and labial lesions are apt to occur.

Aside from stigmata of lues, which may be present, the history may give aid. If the mother has aborted once or several times previously, the presumptive evidence of syphilis is strong. In one instance, among my notes, there had been five miscarriages occurring between the fourth and eighth months; the child presenting the bullous eruption was born and lived for two months, and after this three other children were born at term.

PUSTULAR SYPHILIDES.

Here the lesions are either pustular from the beginning or bullæ and vesicles primarily of clear contents rapidly become turbid and purulent. When present at birth, a pustular eruption may be said to be always specific unless perchance it be variola. Pustules enter largely into the bullous syphilide, which rarely remains of a pure type for any great length of time. In one form yellowish flattened pustules occur in groups about the buttocks, the lesions being of lentil size, but tend to run into confluent forms. In a later form pre-existing papules and tubercles develop purulent foci at the most prominent and central point, and these subsequently dry into very dark colored crusts. Such lesions occur not only about the buttock and lower extremities but also frequently on the face. Marked pustulation indicates a cachectic state in which there is usually found restlessness, rapid pulse and other unfavorable symptoms, and early death may be anticipated. If papules, vesicles and pustules coexist we have practically only varicella to exclude, though eczema and scabies may occasionally present somewhat the same polymorphous appearances.

We will now take up the cutaneous affections characterized by vesicles, bullæ and pustules, or presenting these lesions in such a way as occasionally to raise the question of possible syphilis.

PEMPHIGUS.

The various affections which have been described under this general term have included septic bullous processes, impetigo contagiosa bullosa, erythema bullosum, epidermolysis bullosa hereditaria, traumatic bullous dermatitis, and possibly at times the effects of drugs as well as bullæ due to other causes. Infants and children are more prone to water-blister formation than adults, though vesicular and bullous eruptions decrease in frequency after the first year of life. While less confusion exists to-day than formerly, the whole subject is still surrounded with difficulties. The pemphigus group has become disintegrated and is now passing through a process of reconstruction. The term should be reserved for grave systemic disease with well-marked bullous features.

PEMPHIGUS ACCTUS (FEBRILIS).

Acute febrile pemphigus is very rare, either in the adult or infant, though more frequent in the latter, confusion arising from impetigo, erythema bullosum or other bullous affections. The epidemic form in institutions and in the practice of certain midwives to which I will presently refer is probably impetigo contagiosa or some still ill understood infectious process.

PEMPHIGUS NEONATORUM.

Of the many forms of bullous disease which have been called pemphigus, that usually designated as pemphigus neonatorum interests us chiefly in this connection. It is characterized by an eruption of rounded or hemispheric bullæ seated on a very slightly reddened base, or springing from the normal colored skin, occurring not earlier than the second week as a rule. The fluid within the bullæ is a clear or yellowish serum becoming opaline or cloudy, and sometimes hemorrhagic, though rarely pustular. The soles and palms are not involved, and the number of separate lesions is usually limited but of general distribution. In young infants it is usually apyretic and ends in resolution after a seven to nine days' course. This form is rarely seen. The general health is not greatly disturbed. The first lesions may occur on the face or chest. They vary in size from that of a pin's head to a silver dollar. The statistics of the American Dermatological Association for twenty years show its rarity, giving but eleven cases out of 309,000 skin affections reported. We must, however, remember that dermatologists are not so likely to see these cases as are the family physician and specialists in children's diseases.

Septic forms undoubtedly exist, especially in the offspring of mothers who are septic, probably by way of the milk. Peter[1] describes a bullous eruption in a nursing infant 11 days old, whose blood as well as the mother's milk showed cultures of the staphylococcus pyogenes aureus, a diplococcus, and in separate colonies staphylococcus pyogenes albus.

Pemphigus of the new-born is distinguished from syphilis by freedom of palms and soles, the little tendency to suppuration, to confluence of pustules or to the production of ulcerative lesions (ecthyma), and by the absence of history and other signs of syphilis. The general health is fairly good, and no marked evidence of cachexia is present. It is also to be distinguished from the hereditary predisposition to bullous formation from slight injury—epidermolysis—and from the effects of too hot bathing, hot-water bottles, etc.

PEMPHIGUS CHRONICUS.

In this form older children are affected. The bullæ have a more symmetric distribution, the onset is more insidious, and the course is, as the name indicates, a chronic one, there being a tendency to recurrences or to successive crops of similar nature, or to pass into the form of pemphigus foliaceus, and its ending is lethal.

PEMPHIGUS EPIDEMICUS.

While the writer has for a number of years believed that most so-called pemphigus of the new-born, occurring in epidemics in lying-in institutions, or in the practice of certain midwives, was not pemphigus at all, but the bullous form of contagious impetigo, he is prepared to admit that septic forms may occur which are transmissible and often end fatally. Otherwise it is difficult to account for the great mortality, since, in older children at least, impetigo contagiosa is not a fatal disease. There are probably two forms of bullous affection which might be designated as epidemic. That in which the mother, the nurse, and the physician run a risk of infection, and which occurs among older children in institutions, will usually be found to be impetigo. In instances like that related by Dohrn, an infection of different nature would have to be suspected. He relates that of the children of 65 women attended during a period of four months, by a certain midwife, 28 developed acute pemphigus, and 8 died. After a vacation of a month she resumed practice and delivered 9 women within a period of twenty days. Three of these children had pemphigus. After another interval of three weeks she delivered 6 children, 3 of whom had pemphigus and 1 died. The midwife then gave up practice. Lofenstamm mentions twenty cases in a year, with 2 deaths. Lechmeister[2] mentions 28 cases in 76 births in the practice of one midwife.

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[1] Berliner Klin. Woch., 1896, No. 6.

PEMPHIGUS FOLIACEUS.

This form may succeed the form of pemphigus vulgaris, or it may attack an infant in a state of apparent health. The bullæ, instead of being distended hemispheres, are rather flaccid lesions giving rise to those which resemble a burn whose bullæ have ruptured, causing denuded areas covered or encircled with shreds of epidermis. The diagnosis rests between this affection and burns on the one hand and pemphigoid syphilis on the other. I have more than once had presented to me in institutions infants in much the same condition as above described, with the suggestion that the nurse has been culpable in administering too hot a bath or has applied hot-water bags injudiciously. Knowing as well as I do the dangers of the hot-water bag, I believe one must bear these cases in mind and be on one's guard not to do unintentional harm to the innocent by a too speedy judgment.

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[2] Vierteljahreschrift, 1888, p. 270.

EPIDERMOLYSIS HEREDITARIA BULLOSA.

We will next take up what has been designated as "family pemphigus," because it has in the past almost always been classed as a form of pemphigus. It is that peculiar hereditary predisposition to the formation of bullæ on surfaces exposed to friction and other forms of slight traumatism; the lesions being observed chiefly on the feet, hands, buttocks, or over some joint where pressure of clothing, etc., is made. It is a congenital affection in the sense that an infant may be born with one or more bullæ on the surface, and only in after-life, when the pressure of a shoe or some slight irritant has called forth similar lesions, is the true nature of the affection manifest. The lesions are of short duration, and, although the bullæ are at times quite large, no scarring results. Pinatelle[3] has reported an instance in which seven brothers and sisters of one parent were affected; the bullæ began to form at about the age of 3 years, and occurred every eight to fifteen days. There may be slight pruritus, but as a rule no general symptons are recorded. The palms are not affected, though the mucous membranes are at times. The nails may fissure and be shed, and vitiligo or hyperpigmentation have been recorded as secondary effects.

DERMATITIS HERPETIFORMIS.

Duhring's disease, as it is most appropriately called, instead of adding to the confused state of our knowledge by adding a new name, has simplified matters by giving us a place in which to put a certain number of cases not otherwise readily classified. This being preeminently a vesicular, pustular and bullous affection, occurring in a variety of combinations, characterized chiefly by herpetiformity and tendency to relapse and recur, it seems almost to meet the requirements of the syphilitic eruptions. We will not dwell on the affection, however, as it is rarely seen in early life, Arning's case at the age of 6 years being looked on as exceptional. It has, however, a bearing on the question of vaccination eruptions, which we will consider further on.

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[3] Jour. des Mal. Cut., April, 1899.

IMPETIGO.

There seems to be no very good reason for retaining the qualificative "contagiosa." When we speak of impetigo to-day it is understood that we mean the contagious variety and the only one about which there is likely to be much to say. We may accept a simple impetigo occurring as a few pustular lesions with thicker walls than those of the contagious variety, without much evidence of inflammation, and desiccating without leaving staining or scars, but it is so extremely rare and, since all pustular lesions are probably contagious in the sense that they are inoculable, the matter would be simplified by accepting one impetigo which is sometimes pustular and sometimes vesicular or bullous from the beginning, remembering that there are serpiginous, gyrate or circinate forms of the same process. Some instances strongly suggest ringworm by the circinate outline of the patches, the center having cleared up as in trichophytosis. Syphilis might here, too, enter into question, and possibly instances of reported vesicular and vesiculo-pustular syphilide on the face in infancy have been only instances of this affection. There is this chief distinction to be made, that in syphilis the base tends to become ulcerated. I have observed several instances of the gyrate form of bullous impetigo extending over the greater part of the body and lasting a long time. I have reported one instance and Elliot another, both of which are referred to in a recent article by Corlett.[4]

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[4] Cleveland Jour. of Med., December, 1898.

ECTHYMA.

This follows naturally at this point, for it too is a pustular affection, but here the lesions are on the hips, the back, especially its lower part, the thighs and legs; the face escaping. I am inclined to regard it as a form of impetigo in which the pustules begin in the deeper subepidermic rather than in the subcorneal structures. In those debilitated by preceding disease or other cause, or in whom the lesions have become reinfected with other organisms, deep ulceration or even gangrene may occur. Klotz includes the lesions in a class of "infected scratch" affection. There is a syphilitic ulceration closely allied to ecthyma which has led some authors to assert that ecthyma is always specific; this view can not be accepted. The chief point of differentiation is that simple ecthyma lesions are limited to the lower back, hips, buttocks, and thighs, while pustular syphilide going on to the formation of rounded ulcers occupies any region of the body.

HYDROA.

Hydroa is a term which we will not employ by itself in the present discussion, since most affections so designated enter readily into the class of pemphigus, pompholyx, dermatitis hepetiformis or impetigo bullosa. It usually implies a bullous eruption occurring in successive crops attended by marked itching. There is, however, an affection, "hydroa æstivale," which has been at times confounded with syphilis. It begins in the early years of life and recurs annually or with more or less periodic regularity. There are erythematous spots, vesicles and bullæ on the face or exposed parts. The blebs rupture without becoming purulent, and the scars left behind are the chief cause of its being mistaken for syphilis. This simulation has even extended to the destruction of an ala nasi. Some of the originally described instances were for a long time looked upon as syphilitic. Crusting begins in the center, where there may be an attempt at umbilication, and extends to the periphery. After the crust falls we may find a depressed cicatrix.

Instances as early as the fourth and eighth month are recorded. It is at this age only that bullous syphilis can enter into question, since in subsequent attacks we have the history of periodic recurrence as a guide.

Other diseases to be distinguished from this summer eruption are variola and vaccinia—generalized bullous. Both of these are found elsewhere than limited to the exposed parts. Still, if we accept localized forms of these affections, in common with varicella, doubt may arise.

Echthyma multiforme—bullosa—lacks the pronounced periodicity of recurrence and leaves no scars, has a shorter course and not successive crops extending over months.

Pemphigus is more generalized, has no such history, and does not result in such scarring.

Other designations are hydroa vacciniforme, eczema solare, eruptio estivale, summer eruption, etc., all of which, together with the one here employed, are open to objection, since the affection may occur in the winter. Some authors believe that the cases all belong in Duhring's class of dermatitis herpetiformis.

GENERALIZED VACCINIA.

I must pass over varicella, variola, scabies, drug eruptions, and the other conditions whose lesions of fluid contents might simulate those of syphilis, to say a word in closing on generalized vaccinia, which might be regarded as a latent syphilis which the act of vaccination had served to "bring out," or as a syphilis by inoculation in the process of vaccination. An eruption of bullæ over the body, coming on after vaccination, is to be distinguished from one due to syphilis, largely by the history. If it comes between the ninth and fifteenth day—usually tenth or twelfth—we naturally may exclude inoculation syphilis, which would produce such manifestations only after a lapse of almost as many weeks. Then again, if the lesions are bullous and the child is over 4 months of age, everything speaks against syphilis, since we know that bullous syphilis tends to develop earlier than this and is usually fatal, when the infant is vaccinated in the first days of life. The necessity for strict differentiation and the difficulties often attending the matter were emphasized by Jonathan Hutchinson, at last year's British Medical Association, who related an instance of vaccinia which had been pronounced syphilis by all who saw it. I am sure I have seen many cases which would receive this verdict if the fact of vaccination having been done were withheld. During the past two years, out of a total of 10,000 skin cases, I have had over 600 vaccination ulcers, generalized eruptions, sequelæ or complications to treat. Of this number there were over one hundred more or less generalized eruptions, or one in every six. Of these generalized eruptions there were twenty-four of vesiculo-bullous nature, two pustular and two pustulo-bullous. Since few if any of these children had been vaccinated at an extremely early age there occurred no difficulty in excluding pemphigus neonatorum as well as bullous syphilide.

In a doubtful case it would be possible to proceed in the manner of Espine and Jeadin,[5] who inoculated a calf from the umbilicated vesicles of a generalized eruption which occurred on the fifth day after vaccination, producing vaccine vesicles which on reinoculation gave positive results.

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THE LA GRIPPE EXANTHEMATA.

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During the past winter the locality in which the whole of my life has been spent has been struggling with the weighty problem of whether we were in the midst of epidemics of measles and scarlet fever or whether the exanthems were different manifestations of the same disease and due to the germs of la grippe. The question was of serious interest, as the children of the affected families were excluded from the schools and the business interests of the town were suffering. It was also causing a great deal of hardship in the surrounding community, as a condensing milk company has a factory located here, and as no milk that has been handled by a person coming in contact with a contagious disease is received at the factory, therefore it is no small inconvenience for a dairyman who supplies milk to it to have even measles in his family. The only cases of genuine measles which I saw last winter were in the family of a dairyman six miles from town, and it became necessary for me to inspect the arrangements for milking and caring for the milk while it was being cooled and made ready for the factory, that I might certify to the business manager that all his sanitary arrangements were being carried out, and that the cases of measles were entirely isolated from the dairy and dairymen; for without the attending physician's certificate the milk from fifty cows would not be received at the factory.

I had an opportunity of studying the exanthem before it became epidemic. Nov. 28, 1898, at 2:00 a. m., I was called to see Ruth R., aged 11 months, who was taken suddenly ill with nausea and vomiting after having been unusually well during the preceding day and early evening. She was very restless and irritable, her tongue covered with a thin white fur, fauces slightly reddened but the redness was diffuse and more erysipelatous, with little swelling and no ulcers nor exudate; pulse 120, temperature 102 F. As she frequently had attacks of indigestion and was now cutting her canine and first molar teeth, and was the first baby, I was accustomed to midnight calls, but this time the gums showed no sign of irritation, and the bowels no indication of indigestion. As the mother had suffered with a severe attack of la grippe a few weeks before, and Ruth's symptoms pointed in that direction, I gave some of my usual fever mixture for la grippe and she soon became more quiet. The next morning the pulse and temperature were nearly normal and the tongue coating was disappearing, but she was having some coryza. Giving the child a tonic to be taken for a few days, to prevent relapse, and a nasal antiseptic spray, I dismissed the case. The next day, nearly thirty-six hours from the time the child was taken with nausea, I was recalled to see her. Although apparently otherwise well, she was covered from head to feet with the eruption of measles —large, flat, slightly elevated spots on an inflamed base. Some of the spots had coalesced, making a continuous red, raised surface over the greater part of the face, but on other parts and more over the trunk and limbs white skin could be seen between the inflamed bases of the eruption; as the child was a pure blond the contrast between the white smooth surface of the epidermis and the inflamed red blotches was very noticeable. Despite her apparent well-being there was a slight increase of pulse and temperature: pulse 90, temperature 100F., bowels regular, tongue clean. I found the bean-like glandular enlargements characteristic of rubella behind *both* ears, which is unusual—one is the general rule, and this frequently so small it is hard to find and easily overlooked.

The epidemic of la grippe and the exanthems began the latter part of December. I saw my next patient January 3. The parents supposed the girl to be ill with scarlet fever. She had taken her New Year's dinner at my house, and I had observed that she did not enjoy it as much as usual, but she enjoyed an after-dinner romp with the other children. On the 2d she complained of malaise and stayed in bed all day, and toward evening she was worse, with fever and vomiting. As they lived in the country, I was not called until the morning of the 3d, when she was covered with a scarlet, pin-point eruption from head to toes, but on the feet and legs the spots were not so near together as on the face and body, there being intervals of healthy skin between. It looked like a plain case of scarlet fever, but the tongue showed no redness even at the tip, and was covered with a moist, white fur. There was some swelling and redness of the fauces, but no exudate. She complained of some soreness in swallowing, but there was no enlargement of the glands, either submaxillary or post-cervical. Even the bean-like swelling behind the ear was scarcely to be felt after the most careful examination, made after I decided from the pulse and temperature, that it was not a case of scarlet fever. While noting the dusky, red appearance of the face, I expected to find a pulse of from 110 to 120, but found one of 84, with a temperature of 99.75 F. She complained of headache, especially in the occipital region, and severe pain through the spine and limbs, but had rested moderately well for the night. The mother was not feeling well, having the same posterior headache and aching through the limbs as did the daughter, but was caring for her household. Her forehead looked red-spotted, but the spots were not raised above the surface.

Two children, younger than Anna, had coryza and an eruption a few days later, but neither was very sick, although the eruption in both cases was preceded by malaise and, just before it made its appearance, with nausea and vomiting. I kept all the children in bed until desquamation, which was very free, was complete. The mother and three children had the eruption, the father a severe attack of la grippe without eruption, while the other members of the family, a son, aged 19, who had never had scarlet fever, and a man over 70 years, escaped illness.

The subsequent history of the family is interesting. March 1, they moved to a surburban home and went into a nearly new house. April 1, Anna, who had the eruption in the severest form, developed serious, chloro-anemic heart symptoms. April 8, the son, who had previously escaped the eruption, was taken sick with symptoms of la grippe. After these symptoms abated he broke out with an eruption resembling measles, which he had previously had; I did not see him after the eruption appeared, therefore could not confirm the diagnosis of rubella. In a few days the other three children had the eruption, but a boy of 6 years was not sick enough to remain home from school. None of the three were confined to the house. Since this attack they have all been perfectly hearty.

From the last of December to the first of April the epidemic of la grippe was at its height, and also the cutaneous eruptions.

There were three varieties of the eruption, the rubeola form, as illustrated by Ruth R., the scarlatina form, illustrated by Anna B., and still another, papilla vesicularis. The papillæ were not numerous, were of the color of the epidermis, surmounted by a pearl vesicle the size of a pin-head, which, on being ruptured, emitted a clear water. This eruption was accompanied by intense pruritis. One of my genuine measles patients had this form of eruption after a severe attack of la grippe, which came on a month after the attack of measles. When the mother presented the case, a boy of 13, she remarked on the intense itching and, as it was confined to the hands, especially between the fingers, she said: "I think Robbie has had enough this winter with measles and the grip, and now I wonder if he has the itch."

My cases of la grippe with high temperature were not followed by cutaneous eruptions or other sequelæ. Several of my little patients had an axillary temperature of 105 F., and none of these had any rash, although other children of the same family with a lower temperature had severe exanthems. One instance in particular—a boy aged 8 years—had a temperature of 104 F., with nervous twitching and semicoma enough to make me fear he had meningitis. He never developed any eruption, while his mother, with a temperature of 101 F., showed red spots on the forehead, and the baby, aged 8 months, with a temperature of 102 F., came out freely on her fifth day of sickness with rubella. Whether this freedom is due to the high temperature destroying the toxins, or to the freedom with which I gave acetanilid at the beginning of an attack of la grippe with high temperature, is a point I have not yet decided. I regard acetanilid as much a specific for la grippe as quinin is for malaria; and suppose this action due to its strong germicidal powers.

I think it is not contagious, as the children who were closely confined at home were sure to have the exanthem, with sometimes marked la grippe symptoms. Neither were there any serious sequelæ except in the cases with severe coryza, and then abscesses occasionally developed somewhere along the nasal route, or in the middle ear.

My treatment for the exanthems has been principally baths. I years ago learned that nothing was so good for rubella as a warm saline bath. I have seen severe cases with delirium yield to a half hour's immersion in warm water, and after the sleep which followed the bath the patients were as bright and active as though they had not been sick. If there is fever, I give acetanilid and sodium bicarbonate combined, to which is added a little mild hydrargyri chloridum, if constipated, and some Dover's powder, if very restless. For the coryza, antiseptic spray, Seiler's antiseptic tablets, or powder dissolved in water, and for the middle ear a warm 2 per cent. hydrastis solution in glycerin distilled into the ear as soon as the first pain is felt; if suppuration takes place, I cleanse with an antiseptic douche.

I grouped all the exanthems together under the head of German measles, until I was called to Lorna D., aged 16 years. She had been complaining for several days, but did not seem sick enough to need a physician. After she developed the eruption some of her schoolmates called on her and reported that she had the measles. The next day came the request that the other two children, a boy of 14 and a girl of 12 years, be kept home from school, and then I was called to give a diagnosis. She had the pathognomonic symptoms of rubella. I told her that as the school authorities did not like the name of measles, we would not call it German measles, but would, as she was in the school classics, call it la grippe exanthemata, as the rash was but an accompaniment of the mild attack of la grippe which she had been having, as shown by the history of the case.

DISCUSSION.

Dr. C. G. Slagle, Minneapolis, Minn.—I have been puzzling a little over the title of the paper just presented. I did not know that la grippe was an exanthematous disease, and I think it would have been more accurate if the title had been "A La Grippe Exanthem." I would like to know whether Dr. Garrison considered the exanthem a part of the la grippe or a sequela.

Dr. H. E. Garrison—I think the exanthem was simply a sequela of the grip.

Dr. Slagle—I think you have a genuine epidemic of German measles prevailing along with the grip. I would like to know whether any of these children had the German measles before.

Dr. Garrison—I have had these exanthematous eruptions recur after six or eight weeks, but the recurrence was always preceded by the symptoms of la grippe.

Dr. Slagle—The diagnosis was probably more or less obscured by the use of acetanilid.

Dr. I. N. Love, St. Louis, Mo.—I consider the title of this paper right. Our observations in St. Louis would seem to justify the conclusion that the majority of the infectious diseases are sometimes associated with rashes. We have them in cerebrospinal meningitis and sometimes in whooping-cough. I believe there is some disturbing effect on the nerve-centers, produced by the toxin of this infectious disease, expressed on the skin in the form of the rash. It is not always present, but is in many cases of la grippe. It is not improbable, however, that some of the cases observed by the reader of this paper represented a combination of German measles and la grippe. We had just such an epidemic in St. Louis, and there were all sorts of complications, and there were suppurative disturbances of the mucous membrane of the nose and throat, leading many physicians to make a diagnosis of diphtheria. I still insist that a case of diphtheria is not diphtheria unless there is the familiar clinical picture of the disease. In an epidemic of la grippe in an asylum, I saw an enormous number of cases, complicated with German measles. In some instances the combined diseases were so severe as to produce death. Some of the cases were diagnosed as plain measles. The bacteriologic investigation showed the grip bacillus in the secretions from many of the cases of rubella. We have a definite entity in the bacillus of Pfeiffer as the cause of la grippe. Our great error in the past has been that we have not recognized fully that la grippe is an infectious disease which is peculiarly liable to attack children, and which has a definite course to run. Its chief danger is to be found in the complications, and their neglect because the physician fails to appreciate the danger.

Dr. Joseph Clements, Kansas City, Mo.—We look upon disease largely as an entity, as a something that takes hold of a person, and that must be battled with and overcome. This is a wrong idea. We do not think of health as an entity, as something to be coddled and cared for. The idea misleads us. Our nomenclature gives us the name of the disease, with its symptoms and essential features, and while this is useful, it certainly misleads us, as has been shown in the papers and discussion presented today. When we go to the very beginning of disease, and appreciate the fact that disease consists of vital phenomena equally with health, then we can adopt a nomenclature which will not be misleading either to ourselves or the laity.

Dr. H. E. Garrison, Dixon, Ill.—I simply wish to say to Dr. Slagle, with reference to the production of the rashes by the acetanilid, that in the cases in which this drug was given in largest doses, no rash appeared. In one boy, who had a temperature of 104 F., I gave 1 gr. every two hours until free perspiration was excited. The next morning the mother telephoned that the child was "a hundred per cent. better," and I did not have to make any more calls and the child had no rash. I have had quite a number of similar cases in which, although I gave acetanilid freely, there were no rashes observed as a result of this medication.

A CLINICAL STUDY OF 450 CASES OF SCARLET FEVER

BY ANNIE STURGES DANIEL, M.D.

NEW YORK CITY.

In presenting this study of scarlet fever, I have limited it to those cases occurring in children under 12 years old, attended in the tenement houses of the East Side in New York City, an overcrowded district containing chiefly a foreign population, in sanitary surroundings varying from moderately good to very bad. The nursing has been of a most varied character, from that of an intelligent mother to that of a drunken woman.

No patient has been considered who did not present the typical physical symptoms of a well-marked scarlet fever, and none that was not seen during the period of eruption and attended until convalescence or death. Each presented the symptoms of redness of the fauces, a definite eruption of red pin points scarlet in color, very close to each other, with a general appearance of a diffuse redness—this followed by desquamation, and the disease accompanied by fever.

The cases are divided into those presenting mild symptoms throughout and those in which the symptoms were severe, or in which the disease was complicated; 304 presented mild symptoms throughout, and each child made a complete recovery, with the exception of three who were left with a permanent endocarditis.

Ages.—These ranged from 7 months to 12 years; the largest number of cases occurred at 3, the next at 4 years; only 8 occurred under 1 year—of these 1 was at 7 months, 2 at 10 months and 6 at 1 year. At from 9 to 12 years there occurred 20 cases; of this number 8 were at 9 and 10, and 2 each at 11 and 12 years.

Premonitory State.—A premonitory period existed for four days with 6 children, three days for 11, two days in 46 cases, and twenty-four hours in 55 cases. The remainder were seized at once, while in apparently perfect health.

The First Symptom.—The eruption was the first symptom noted in 186 children; spasms in 2; a chill in 2; sore throat in 18; fever in 28; fever and vomiting in 27, and 41 presented vomiting only as a first symptom. One patient, an epileptic boy, had no spasms until the fifth and sixth days, then a succession of epileptic seizures; in other respects the course of the disease was normal.

Fever.—The highest rectal temperature noted was 105 F.; this occurred only in one child; the lowest temperature, 98.4 F., occurred in 2 children; 20 presented a temperature of 104 F. One of 99 F. throughout the course of the disease occurred in 19 children.

Course of the Fever.—The temperature fell to 99 F. or below at periods varying from three to nineteen days; 41 children had at no time a temperature of more than 100 F., and the mothers insisted that no fever had been present at any time. The fever in the majority fell on the third day; in 1 it persisted for nineteen days. In 4 patients the desquamation was delayed; in these the temperature had fallen to normal but rose during the twenty-four hours preceding the desquamation, falling again to normal as soon as desquamation was fairly established; in these cases there was nothing abnormal except the delayed desquamation.

Heart.—In every instance the heart was carefully examined at frequent intervals, especially during the first five days; 66 children presented an endocardial murmur, disappearing entirely in 63, and remaining permanent in 3. The disease had apparently no effect on a child with chronic endocarditis; 6 children presented persistent irregular heart action.

Involvement of Joints.—Eighty-nine children complained of pains in various joints, of a mild character, going away with the disappearance of the eruption. Of these, 4 had an accompanying endocarditis, 3 were found with marked torticollis unaccompanied by enlarged glands; this symptom appeared during the stage of eruption.

Gastro-intestinal Tract.—Four patients presented mild gastro-intestinal catarrh during the period of desquamation.

Bronchial Catarrh.—This symptom was presented during the period of eruption, by 24 patients.

Kidneys.—Twenty-three children presented albumin and casts in the urine, these rapidly disappearing. This small number is probably due to the fact that the majority were so young, hence no clinical symptoms of involvement of the kidneys; one passed a markedly diminished quantity of urine from the beginning to the end of the illness; repeated daily examinations failed to reveal either casts or albumin.

While the normal course is rarely precisely the same in two children, the number of abnormalities is legion, and usually more than one abnormality is present. The prognosis as to life and ultimate recovery presents a most serious problem as well as the question of treatment. There were 146 abnormal cases.

Kidney Complications.—This is probably the most dreaded complication, and occurred as a solitary one in 15 patients; of this number 5 presented nothing unusual; 2 became chronic; 1 received absolutely no treatment, the mother utterly refusing to give one dose of medicine. Some of these presented peculiar symptoms of sufficient interest to be related briefly.

Case 1.—A child of 2 years presented a mild type of scarlet fever until the second week, when she was seized with a sudden swelling of both parotid glands, later involving the submaxillary glands; there was no edema nor swelling in any other part of the body. The urine was nearly one-half albumin. Careful and repeated examination revealed no casts. The child died in convulsions after twelve hours of complete suppression of urine.

Case 2.—This patient's course was normal until the second week, then a rise of temperature. No casts were found and only a trace of albumin, the quantity passed being normal in amount; the child died suddenly, of pulmonary edema. Autopsy revealed an extensive inflammation of both kidneys.

Case 3.—This patient presented a mild but persistent endocardial murmur, and on the evening of the seventeenth day was suddenly seized with an attack of frightful dyspnea, dying soon after. The urine had been examined carefully at intervals. A specimen passed shortly before the attack of dyspnea, and a small quantity found in the bladder at the autopsy, contained neither casts nor albumin, but the kidneys showed intense inflammatory action; the heart presented a recent endocarditis.

Four patients presented urine loaded with casts and a large amount of albumin, but absolutely no edema nor swelling in any part; 3 of these recovered; the fourth died after complete suppression of urine for twenty-four hours. Repeated attempts were made with the catheter to ascertain whether urine was present in the bladder.

Case 4.—A child in whose urine had been found both casts and albumin, but in whom there were no unusual symptoms, was suddenly seized with intense dyspnea, dying very soon. At the autopsy both the pleural and the pericardial sacs were much distended with fluid.

Angina.—The difficulty of clinically making a positive diagnosis of the angina of scarlet fever and that of diphtheria presents itself when the involvement of the throat is the first symptom noted, and is especially difficult when the process extends to the larynx. In none of our cases was the Klebs-Loeffler bacillus found. Fifty-nine patients in whom the first and most important symptom was the excessive involvement of the throat, are included; 15 presented no other feature; 15 were accompanied by septicemia, while 29 were variously associated with other complications. Fifty-one presented a moderate amount of exudation on the tonsils and pharynx in addition to the normal redness of scarlet fever.

Angina with Involvement of the Larynx.—There were two children with this condition. A gray exudate completely filled the mouth, pharynx and fauces of one child, and it became hoarse, with marked dyspnea. Suddenly the latter became intense, the child deeply cyanosed, and death almost instantly occurred. The other child presented severe symptoms, but made a good recovery.

Severe Angina with Endocarditis.—This occurred in 5 patients without other complications; 4 entirely recovered, 1 endocarditis remaining permanently.

Angina with Complete Temporary Deafness.—This occurred in 1 patient without discharge from the ear, the child recovering completely.

Angina with Regurgitation of Fluids.—In a child 19 months old, on the third day, marked regurgitation of fluids occurred through the nose, lasting for two days.

Angina Accompanied by Eruptions.—

Case 1.—This patient had severe angina with endocarditis, and on the eighth day a typical eruption of varicella. As far as known the child had not been exposed to the disease.

Case 2.—In a patient 16 months old, there was mild angina until the third day, then extension to the nose and larynx; on the day following there appeared, on the arms, an eruption of dirty, red-colored papules, extending to the legs, leaving the trunk, which presented the well-marked eruption of scarlet fever, clear; on the evening of the fourth day she was seized with a spasm and died in coma a few hours later. During the illness the temperature varied from 102 to 106 F.

Case 3.—A girl, 2 years old, without preliminary symptoms, was seized with severe angina; the eruption of scarlet fever appeared twenty-four hours later. The membrane extended to the nose and ears, with a profuse purulent discharge. The eruption of scarlet fever remained forty-eight hours. Immediately after its disappearance there appeared on the extremities and buttocks a papular eruption in irregular patches, itching intensely; this appeared and disappeared at regular intervals during the entire course of the disease, the disappearance always beginning in the center and extending to the periphery of the patch; on the nineteenth day of the disease there was general edema of the extremities, and albumin and casts were noted at intervals, but neither in great abundance. On the twentieth day, without warning, the child was seized with a spasm, during which she died.

Case 4.—A child of 19 months presented a mild attack of scarlet fever and progressed normally until the ninth day; she then had fever and an eruption appeared closely resembling measles, first as small red papules on the face, rapidly extending to the trunk; this was accompanied by severe angina; the progress of the disease was intensely rapid, the child dying twenty-four hours after the appearance of the eruption. Every effort was made to obtain an autopsy, but in vain.

Case 5.—A girl, 19 months old, presented mild symptoms until the third day, when the angina became more marked; on the fifth day there was much swelling of the submaxillary glands; the urine contained blood casts and much albumin. Desquamation was profuse. On the eighth day a papular eruption appeared on the forehead, spreading over the face and trunk, the papules rapidly coalescing, and the child dying twenty-four hours later.

These cases probably belong to Henochs' "Scarlatina Variegatta," or simply a symptom of the general septicemia.

Angina with Suppuration of Submaxillary Glands.—This occurred in 10 cases:

Case 1.—Severe angina, multiple arthritis, submaxillary abscess, were followed in this patient by death in convulsions.

Case 2.—Severe angina, suppuration of glands with papular eruption similar to those previously mentioned, occurred in this instance. Recovery followed after a protracted illness.

Case 3.—A boy, 6 years old, had severe angina, severe pain in the right knee only, and on the second day regurgitation of fluids through the nose. The urine at this time contained casts and albumin. From the third to the eleventh day suppuration of glands was evident; these opened on the eleventh day; on the eighth day there was a sudden rise of temperature to 106 F., without special reason, and on the ninth, endocarditis. The child, after a prolonged convalescence recovered, with a permanent endocarditis. The other 7 patients presented nothing of unusual interest, all recovering.

Angina with Severe Arthritis.—There were 4 cases of this complication, 2 presenting nothing unusual.

Case 1.—This patient presented severe angina, multiple arthritis, endocarditis and bronchopneumonia, with recovery.

Case 2.—Severe angina with torticollis was evident in this patient; this was not due to the enlarged glands, persisting after the angina had disappeared with the enlarged glands.

Severe Angina, Pleurisy with Effusion and Arthritis.

—A girl of 5 years presented a very extensive angina extending to the nose; on the fourth day there was severe arthritis, on the thirteenth pleurisy with effusion, the heart very irregular. She ultimately recovered.

Involvement of the Nervous System.—A moderate amount of delirium occurred in all cases accompanied by fever and great restlessness at the height of the eruption; 2 only were introduced with spasms, and these died later of septicemia.

Meningitis.—

Case 1.—A girl of 4 years, on the second day was found with retraction of the head and other symptoms pointing to an involvement of the meninges. She died in coma on the sixth day of the disease. I greatly regret my inability to have had an autopsy in this case.

Case 2.—This patient was a normal case until the seventh day, when there was vomiting, retraction of the head and semicoma, from which the child gradually recovered. There was nothing in either of these cases to give any other cause for the complication than an actual involvement of the cerebral meninges.

Facial Paralysis.—This occurred in one patient, on the left side of the face, the immediate cause being pressure by an enlarged gland, the paralysis remaining after the glandular swelling had disappeared, and the child ultimately recovering.

Excessive Fever without Complication.—This occurred in 10 patients, usually as an initial symptom subsiding with the disappearance of the eruption; the highest temperature noted in these cases was 106.5 F.

Case 2.—A boy of 5 years was suddenly attacked with fever; his temperature a few hours after was 106 F.—6 p. m.; the next morning at 9 o'clock the temperature was 99 F. The fall could not be attributed to medication; a mustard bath was given by myself, the mother so intoxicated that she was utterly unable to give any attention to the child. These patients presented nothing unusual except the fever, and nothing of importance was noted in the others.

Septicemia.—There were three patients who presented this complication, the children dying in from twenty-four to forty-eight hours after the initial symptom without complications; they were characterized by spasms, and great restlessness followed by coma, a marked symptom being the apparent inability of the child to make a loud noise either by crying or talking. Neither hoarseness nor dyspnea was present.

Involvement of the Liver.—A girl of 5 years, on the fifth day of an otherwise normal attack, was seized with fever, at once followed by an intense universal jaundice; there was marked tenderness over the liver, but there was no change in the normal size of this organ; a slight amount of albumin was found in the urine. This complication is said to be common in tropical countries, but in temperate climates very rare. This child, the only one presenting this complication, completely recovered.

Multiple Arthritis.—This occurred in 7 patients, without other complications, except in one family in which 4 children were attacked with scarlet fever and 2 of them had severe arthritis, 1 of whom also had endocarditis.

Case 1.—A girl of 5 years, on the second day developed intense pain in the joints of the extremities, accompanied by much swelling; no murmur presented at any time, but the heart was very slow and irregular, varying from 54 to 70 beats; this persisted for a month. The father of this child has rheumatism at intervals, one sister has had chorea and another has chronic endocarditis. The other patients presented no symptoms of special interest.

Arthritis with endocarditis without other complications existed in three cases.

Endocarditis.—This, without other complications and accompanied by fever, was seen in 2 patients, both of whom recovered.

Endocarditis and Nephritis.—In 3 patients the endocarditis occurred first and was followed later by the nephritis.

Endocarditis with Chorea.—This complication occurred in 1 patient, the chorea appearing on the third day after the endocarditis was detected.

Endocarditis, Arthritis and Severe Nephritis.—This complication occurred in one instance. The child completely recovered. Eight days after complete desquamation it had an attack of acute rheumatic arthritis and endocarditis, and completely recovered.

Pericarditis with Effusion.—Two patients presenting an endocarditis at the same time, arthritis and marked torticollis appeared in one; the other, on the eleventh day, was found with irregularly outlined patches of coalesced papules confined to the extremities.

Lungs and Pleura.—Nine presented complications of these organs: Bronchitis with gastric enteritis, 1 case; bronchopneumonia, 6, and one patient had this affection complicated by submaxillary abscess, and one by severe septicemia, the latter dying.

Pleurisy.—This occurred without effusion in 1 patient, appearing on the second day after the eruption.

Lobar Pneumonia.—In 1, a boy of 5 years, nephritis had occurred from the beginning, the temperature varying from 103 to 105 F. On the evening of the sixth day, the child became violently delirious, the temperature rose to 106 F., the physical signs of lobar pneumonia were found in the lungs; on the sixth day the temperature suddenly fell below normal, the child was found in collapse, the pulse extremely feeble, and the patient apparently dying; during the next twenty-four hours the temperature gradually rose to 105 F., slowly falling again, and perfect recovery followed.

Secondary Eruption.—Two children presented this unusual condition. One had a mild, but typical attack of scarlet fever. In the third week, while desquamating profusely, he vomited without cause; he had considerable fever for twenty-four hours, and then another typical eruption of scarlet fever. Desquamation was long and profuse. The second case, as the first, was mild until the second week, then followed symptoms precisely similar to a primary attack; the second seizure, however, was much more severe, and was accompanied by severe angina and nephritis; in the second week of the secondary attack the child was covered with a papular eruption closely resembling measles, but without the accompanying coryza, and there had been no known exposure.

Scarlet Fever and Measles.—Four patients presented this complication.

CASE 1.—A boy, 5 years old, had well-marked scarlet fever with a temperature varying from 101 to 105 F., without apparent reason for the fever; the type was otherwise mild; desquamation began on the fourth day and was profuse. On the eleventh day he presented coryza, on the fifteenth a well-marked and typical eruption of measles, the temperature 105.8 F., and decided bronchial catarrh, and on the seventeenth marked nephritis with swelling of the submaxillary glands; on the twenty-fourth day the glands were incised, and much pus was discharged. The child died on the thirty-first day of the nephritis. He had never had measles.

CASE 2.—A brother of Case 1 was attacked in the same manner, with a mild type of scarlet fever; on the second day coryza increased the fever; on the third there was an eruption of measles accompanied by much bronchial catarrh, and on the seventh much swelling of the glands with increased fever and discharge from both ears; the fever continued, the child dying on the nineteenth day, with a temperature of 108 F. He had never had measles.

These were 2 of 4 patients with scarlet fever in this family; the other two children had had measles, which was epidemic in the house and the children had been exposed to both diseases.

Case 3.—A child, 15 months old, with mild scarlet fever, was desquamating on the third day, and on the fifteenth an eruption of measles occurred. Both diseases were typical and of a mild type.

Case 4.—A girl, 5 years old, with well-marked scarlet fever, angina moderate, on the third day had a temperature of 104 F., marked bronchial catarrh and arthritis, and desquamation on the fourth; on the sixth she had photophobia, coryza, and twenty-four hours later an eruption of measles; she died on the fifteenth day from the first symptoms of scarlet fever, of bronchopneumonia.

All of these children had had a known exposure to measles, and none had had the disease before; the eruption in each was typical of measles as well as of the scarlet fever.

Scarlet Fever and Malaria.—One patient only presented this complication—a girl, 3 years old, who had lived in a markedly malarious district, but who had never had malaria. The scarlet fever was a severe type, the angina severe; there was a discharge from both ears on the fourth day, the morning temperature 104 F., the noon 101 F., and at 9 p. m. it was 106 F.; there seemed to be no reason for the excessive fever. On the sixth day the child fainted, without apparent reason; this was repeated in the same manner in the evening, the temperature fluctuating between 102 and 104 F. On the thirteenth day there was a chill, repeated on the fifteenth, and on this day a well-marked endocarditis was found; the child was much exhausted, fainting whenever lifted. On the sixteenth quinin was administered. On the eighteenth she had another chill, with a mild convulsion; the spleen was much enlarged. There was neither chill nor fever after the twenty-second day. The endocarditis disappeared and, except for a chronic otitis media, the child completely recovered. No examination of the blood was made, as at the time when the examination would have revealed the organisms, I considered that the child was in so precarious a condition that even a small puncture might precipitate a fatal fainting spell. The care which the mother bestowed on this child helped materially to save its life.

Secondary Attack.—A boy, in June, 1895, presented a well-marked mild type of scarlet fever, a mild endocarditis accompanying. Desquamation was marked, the child completely recovering. In January, 1896, while in apparently good health, there was severe vomiting for twenty-four hours, then eruption, with severe angina, mild endocarditis, nephritis and otitis media, followed by good recovery.

Scarlet Fever and Wounds.—Three patients presented this complication.

Case 1.—A girl 3 years old had a tumor of the larynx removed at the N. Y. Infirmary for Women and Children. On the third day after the operation she developed scarlet fever with a moderately severe angina and nephritis. She wore a tracheotomy tube throughout the illness, and nothing abnormal was noted about the wound. The child had been visited by her mother, who had just come from a child dying of scarlet fever.

Case 2.—A child, 3 years old, on the third day of her scarlet fever, received a lacerated wound of the scalp, which remained unattended for twelve hours; it healed rapidly, the child presenting nothing abnormal.

Case 3.—A child of 2 years, on the eleventh day, was severely scalded on the scalp. The ulceration was deep and extensive, in some places reaching the bone, but the child, after a tedious illness, recovered.

Unusual Onset.—

Case 1.—A boy, 4 years old, was "feverish" for eight days, then the right hand and foot became suddenly swollen and painful, and there was slight vomiting. Twenty-four hours later there was a well-marked eruption of scarlet fever. With the appearance of the eruption the swelling extended to all the joints of the extremities, with an accompanying angina. Careful examination of the urine revealed a few red blood-cells; on the fourth day a faint, rough blowing murmur was heard with the first sound of the heart. Desquamation began on the fifth day. On the sixth day pain in the joints was severe, and there was a pericarditis with effusion, and the heart was irregular, at times only one sound, and this changing from a rough blowing to a musical whistling sound, alternating at short intervals. The urine at no time showed casts or albumin; the red blood-cells disappeared on the fourth day. The child recovered with a permanent endocarditis of the mitral valves.

Heredity.—Nothing was especially marked except alcoholism in one or both parents, in about one-third of the cases.

Personal History.—Marked rachitis existed in a large number of patients; otherwise there was nothing special in the personal histories.

First Appearance of Abnormal Symptoms.—In twenty-six patients the abnormality was noted later than two days.

Fever.—This varied from 103 to 108 F., falling to normal at periods varying from four to twenty-one days.

TREATMENT OF SCARLET FEVER

BY R. B. GILBERT, M.D.
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Scarlet fever, like measles and smallpox, is a self-limited disease and therefore at first glance it would seem that the treatment of the disease were a very simple matter. However, when we consider the many dangerous complications and sequelæ that are liable to occur, many of which may be prevented by judicious management of the primary disease, the matter of treatment of scarlet fever at once becomes an important one.

It is now quite generally admitted that there is a specific scarlet fever microbe, but its exact nature is not yet definitely settled. The time may be near at hand when we shall have the bacteriology of the disease satisfactorily settled and the specific microbe isolated and demonstrated. We may then reasonably expect that a specific germicidal remedy will be found which will as effectually rob scarlet fever of its death-dealing power as has vaccination that of smallpox. Then, indeed, but not unti then, will its treatment be a trivial matter.

Dr E. M. Landis, Chicago, has recently reported a case of scarlet fever sucessfully treated by him by two injections of antistreptococcus serum. He says the temperature fell from 106.5 to 100 F. immediately after injecting 10 c.c. of the serum, and he did not discover any unpleasant symptoms following its use. We will await with interest the developments along this line.

Since there is no known remedy that will abort the disease, we must be content to conduct it to a safe termination, and at the same time make our patient as comfortable as may be under the circumstances. Besides the welfare of the patient under treatment, there is another equally important matter that the physician should attend to, viz, as far as possible prevent the further spread of the disease by infection and contagion.

May we not with propriety, under the caption of treatment of scarlet fever, include also prophylactic treatment? It may be briefly stated that the leading indications in the management of scarlet fever are to guard against infection, control hyperpyrexia, look after the later profound anemia and attend to complications. The milder forms of the affection need really no treatment other than keeping the patient in bed and the enforcement of prophylactic precautions. We must, however, remember that the danger of infection is as great in the mild cases as it is in the severer forms. Athough the danger of infection is not so great early in the disease as it is in the later stage, yet measures to prevent its spread should be promptly adopted. As soon as the diagnosis is made the patient should be carefully isolated. The room in which he is to remain should be divested of all curtains, carpets, cushioned furniture, books, papers, toys, etc. Dogs and cats should be rigidly excluded, as they readily transmit the germs of the disease in their fur. All the excreta from the patient should be received in a receptacle containing a strong antiseptic solution.

By far the greatest danger of infection and contagion is from the exfoliations of the skin during convalescence. Each minute epithelial scale, scarcely visible to the unaided eye, and light enough to be wafted about in the air, carries with it numerous scarlatinal microbes. These epithelial scales are exfoliated in the form of either furfuraceous dust or large masses of dead epithelium, and when they are once set afloat in the atmosphere they are beyond control. They entangle themselves in the clothing, especially of woolen goods, and may be carried long distances and be kept for many months and still retain their vitality. The simplest and yet most efficient means of dealing with the desquamations is to keep the skin thoroughly anointed with hog's lard, olive-oil, etc., which may be scented with some aromatic oil if desired. The application of these has a very soothing effect on the skin, and allays the itching and burning and gives a sense of comfort and quiet to the patient. I have often seen the temperature fall a degree or more in a few minutes after free inunctions. The exfoliating scales are thus loaded down with grease and will not float about in the air, but are rubbed off in rolls and drop on the sheet, from which they can easily be gathered up and cast into the fire.

By thus preventing the fine particles of epithelium from floating about in the room, the attending physician's clothing is less liable to become infected. It is a well-known fact that the poison of this disease has frequently been carried from house to house in the clothing of a careless and unsuspecting physician. All bedding should be thoroughly disinfected before being used again. This can be done cheaply and effectually by submitting it to the action of boiling water or "live steam" for a few hours. This method of disinfecting is more reliable than fumigations with sulphur of formaldehyde.

What shall we do for hyperpyrexia of scarlet fever? Any temperature above 103 F. should be regarded as dangerous, on account of the derangement so liable to occur to the nervous system and glandular organs. When antipyrin was first introduced, it was my custom to give it for reducing temperature in scarlet fever, but on several occasions I have had serious threatening of heart failure from its use, and now I never use it. Quinin combined with phenacetin and caffein in appropriate doses, and at short intervals until the temperature is sufficiently-reduced, is safe and reliable, and it should be given whenever the temperature rises above 103 F. The patient should be encouraged to drink cold water freely. The full bath and wet sheet pack are recommended by some high authorities, but there are many objections to their use. In addition to the fright and excitement caused by the bath, the depression and shock which follow are sometimes considerable. The only cases in which I think the full bath advisable are those in which the patient has very high temperature and violent delirium.

The pharyngitis and tonsillitis which are almost always complications should be treated by frequent spraying of the throat with a mixture of equal parts of dioxid of hydrogen and lime-water. This has a decidedly soothing effect on the pharyngeal mucous membrane and relieves much of the difficulty of deglutition. The same mixture should occasionally be sprayed into the nasal passages also, for its detergent effect. The use of dioxid of hydrogen, as above described, materially lessens the danger of infection by the secretions from the throat and nose.

To allay restlessness, especially at night, chloral hydrate is an acceptable remedy. Opium should be studiously avoided in the treatment of scarlet fever, for the reason that it may lessen the activity of the renal secretion and thus increase the danger of nephritis.

The next most important indication in the management is, as far as may be, to prevent the profound anemia that usually follows in the course of the disease. Iron in some palatable form should be given from the start, notwithstanding the old adage to "never give iron in fever." The ammonic citrate of iron in 1-grain doses suspended in simple syrup is a pleasant medicine. It is my custom to give this form of iron throughout the course of the fever. I believe that it in a measure prevents the deterioration of the blood and lessens the danger of complications and sequelæ. I believe that the use of iron as above indicated aids materially in maintaining the function of the heart, and thus the better function of all the organs of the body.

Nephritis is the most dreaded complication and sequel to scarlet fever, to prevent which we must do everything in our power. In addition to controlling the temperature—by keeping it below 103 F.—and supportive measures by the administration of iron, we should see that a sufficient amount of easily digested food is taken to sustain the vital forces. Liquid diet, such as soups, milk and broths should be given. The patient should be carefully guarded against drafts of cold air. He should be kept in bed and under sufficient cover to promote the action of the skin, which may be facilitated by drinking freely of hot lemonade and other drinks.

In conclusion: With quinin and phenacetin to control temperature, chloral hydrate to induce sleep and iron as a supportive, we can meet the leading indications in the disease, and by frequent inunctions the desquamation is prevented from floating about in the air and thereby spreading the infection. Thus we may sum up the management of typical cases of scarlet fever.

DISCUSSION.

Dr. Chas. H. Quayle, Madison, Ohio—It is very important that we should hear individual methods of treatment of such diseases as come under the care of most practitioners. I use a carbolized inunction instead of a plain one, and think it is preferable. As a mild stimulant to the kidneys I employ lithia water. I also make it a practice to avoid the use of such antipyretics as acetanilid, because of their depressing effect on the heart. I am guided in the use of diaphoretics by the condition of the pulse. The bowel should be flushed out every day by warm water, and I believe this is very essential. For the anemia I use peptomanganate of iron.

Dr. C. G. Slagle, Minneapolis, Minn.—I differ very materially from the author, and, therefore, feel some hesitancy about discussing the paper in his absence. The title of the paper should be "The Present Status of Our Knowledge of the Management of Scarlet Fever," for certainly there is not a new thought in it; it is only a résumé of what every author has stated. There is no harm in this. Any one who will advocate any therapeutic agent in scarlet fever to reduce the fever is, in my opinion, wrong. I am not a medical skeptic by any means, but in scarlet fever do not give antipyretics, do not give quinin, and do not give iron. We should use cold water—it is the main therapeutic agent in this disease. In measles, on the contrary, the physician should beware of the use of cold. For scarlatina use, not *hot* lemonade but *cold* lemonade, cold enemata and cold packs. I desire to emphasize the usefulness of inunctions; they certainly reduce the temperature, and this is not surprising, as scarlet fever is not dissimilar from a burn on the body surface. They are also of value in preventing the flying off of the desquamating particles.

Dr. Ewing, Salt Lake City, Utah—I use eliminative medicines altogether—medicines which act on the kidneys and skin. I am fond of using acetate of potassium dissolved in liquor ammonii acetatis. If we can diminish the fever by washing out the toxins by baths, enemas and the free ingestion of water, we are doing a great deal for the patient.

Dr. H. E. Garrison, Dixon, Ill.—For eight years I have used acetanilid in scarlet fever, and I now have no fear of this disease. I have given this drug very freely ,and the only trouble I have ever experienced has been a marked diminution in the quantity of urine. On this account I began the addition of bicarbonate of sodium to the acetanilid, and since then I have had no further trouble with it. Some years ago I published a series of cases *(Medical Record)* in which I had most excellent results, and no disagreeable sequelæ from the use of this drug. I believe in the free use of water and also of inunctions, the latter particularly to prevent the spread of the disease. If the patient can be isolated, there is no more need for another member of the family to become infected than for a case of smallpox to develop because there is a smallpox pest-house outside your town. I have had some very severe cases, with very high temperatures. I like acetanilid because it quiets the restlessness. Cold water is good, but the acetanilid makes the patient feel much better. I have tried it frequently, and have very carefully watched the result. I have lost all dread of scarlet fever since I have been using this treatment. I expect no complications where I use it. I have not had a case of otitis media since I have adopted the use of acetanilid in scarlet fever.

Dr. C. G. Slagle—I have made the very same mistake that I think the last speaker has made. In time Dr. Garrison will meet with a terribly malignant epidemic of the disease, and then this treatment will lead to trouble. I would rather treat diphtheria to-day—with antitoxin—than treat an epidemic of malignant scarlet fever. I believe Dr. Garrison has had to deal largely with mild cases.

DR. BELL, of Illinois—I have been connected with the health board of our city for the last three years, and I would have been glad if something had been said in the paper regarding the prophylaxis. As chairman of the board of health I have found that it was almost impossible in our smaller cities to make the citizens regard health regulations. I have known of cases being continued in the city simply from this cause. I wish some plan had been suggested by which the sanitary laws of the state could be enforced. It is a sad reflection on our citizens that they should allow their children, while still desquamating, to go up and down the streets while the health authorities are powerless. Those of you who have not been connected with health boards of our smaller cities have no idea of the trouble arising from this cause. I have found that physicians are careless about reporting cases, and this has been the cause of the spread of much disease. It is usually because the physician is too careless about reporting these matters to the proper authorities. I have sudied this subject very closely, and am convinced that physicians should not blame the laity, because they are themselves so careless. I wish the author could have given us a remedy for this evil. I have tried to do this. It is criminal for me to let my child go out on the street before desquamation is complete; still this thing is done every day, and not only this, but the children are taken on trains from place to place. We as physicians should see that our legislators give the health boards authority to prevent such criminal practice.

The treatment suggested in the paper seems to be fairly good, particularly as regards the use of inunctions. In mild cases acetanilid will do good, but in the very malignant ones, no remedy will benefit. I would rather treat almost any other disease than the malignant form of scarlet fever. Fortunately this type is not so common now as it was a few years ago.

DR. CHAS. H. QUAYLE—I am also a health officer, and I have found that abundant authority is conferred on the health board by our legislature. The health authorities should make an example of a few of these delinquents.

DR. JOS. CLEMENTS, Kansas City, Mo.—In my city we fine the doctor $50 for such neglect.

DR. BELL—I have tried frequently to make an example of these people, but I have never been able to get the board or the district attorney to move in the matter. The citizens in my town have openly defied me to do anything.

DR. L. L. SOLOMON, Louisville, Ky.—As a close friend of Dr. Gilbert I am pleased to be able to tell him that his paper has been torn to pieces. Healthy comment is a useful and helpful thing. Answering that speaker, who asserts there is nothing new in Dr. Gilbert's paper, I would say, that in so far as bacteriologists and pathologists have, up to the present time, afforded us no special knowledge of the nature of this disease, I can see no better way of treating it than that already given by recognized authorities, which explains the fact that there is nothing novel in the paper. We should not forget that these antipyretics are also *analgesics*, and where there are severe headache and point pains, acetanilid has a decidedly soothing effect. On the other hand, in cases, associated with severe muscular pain, phenacetin is, in my hands, a better remedy. In others, where the pulse is hard, and where there is too much tension, antipyrin is the greatest of remedies, and the one least to be feared; in the cases which I see, aside from the malignant ones which are amenable to no treatment, this drug is exceedingly beneficial. I give small doses—¼ gr.—to even the smallest infants. It causes perspiration, and this elimination is, in itself, exceedingly useful, because it throws the strain off the kidneys and on the skin. I am in favor of using cholagogues, such as cascara or phosphate of sodium, as an additional aid. It is a difficult matter to give baths to children; they easily become frightened, and, in many instances, such measures as baths can not be continued. Moreover, cold applications contract the superficial cutaneous vessels, and cause acute internal congestion. This seems to increase the liability to renal congestion. I sometimes employ cupping or digitalis poultices to the region of the kidneys. I often prescribe scoparius to relieve the tendency to passive congestion of these organs. We must select the remedies which act on the desired portion of the bowel, or the desired portion of the kidney. Scoparius seems to be especially useful where there is passive congestion of the kidneys. Under its influence, their activity is increased. This remedy is best given by adding half an ounce of the tops of cytisus scoparius to half a pint of water, boiling down to four ounces, and giving this liquor in doses of one teaspoonful to a tablespoonful every two to three hours. In Louisville it is the custom to placard every house in which there is scarlatina, and a fine is imposed on physician and parent or guardian unless the health board is notified. Under no circumstances is the patient allowed to leave the house until the doctor has informed the health officer that the premises have been properly disinfected, and that desquamation is at an end. There is also the penalty of a fine if the other children in the house go to school before this time, and these admirable laws were formulated and became statutes by reason of the unceasing and untiring efforts of Dr. Gilbert, in whose absence I have had the pleasure of appearing before you to-day.

NOTES ON FRACTURES OF THE LONG BONES WITHOUT DEFORMITY. THE SUB-PERIOSTEAL TYPE OF FRACTURE IN THE YOUNG.

BY JAMES PORTER FISKE, M.D.
NEW YORK CITY.

That fractures of the long bones often occur without deformity, and indeed without many of the usual signs of fracture, is well known; still the absence of the usual signs may lead to the overlooking of the principal lesion at the first examination, and when this has happened, the subsequent condition may be quite disastrous to the attending physician at the second examination. A study of the clinical features of simple fractures, combined with the findings of the operator, should enable the careful observer to make a rather accurate diagnosis in most of the bone lesions brought to his attention.

Fractures without deformity may occur in the long bones at any age, but in adults these fractures are easily displaced and give the usual signs on examination. In children, loss of continuity without deformity has been noted in cases of epiphyseal separation, where there has been spontaneous reduction, or where the force has not been sufficient to produce displacement, yet mobility has been found on examination. We have also noted many cases of simple complete fracture in the young, where the fragments were in accurate apposition, but where the usual signs, including displacement, were elicited on manipulation. It is not these cases which I intend to consider here, but a type of fracture occurring in children and young people where there is no tendency toward displacement, which, on examination, presents certain features which I think entitle it to be considered by itself, and which we regard and shall speak of as the subperiosteal fracture. On the fracture service at the Roosevelt Hospital Dispensary, we have recorded a number of cases in children, all of which presented the same signs and symptoms as regards the existence of fracture, and which I feel justified in placing in this category.

It has been stated that fractures are accompanied by rupture of the periosteum. In adult life this is generally true, but in the young we have several types where the periosteum is more or less intact. In fact, the forms of incomplete fracture noted are accompanied at most by only partial rupture of the periosteum, and in the subperiosteal type the injury to periosteum is slight. Such a fracture occurring after a trauma, slight or of moderate severity, without deformity, may be overlooked where one's suspicions are not aroused, or by a hasty or superficial examination.

One of the earliest cases noted came before me at the Roosevelt Hospital Dispensary. A child, 15 months old, fell from a cot and suffered a contusion about the hips and thigh. Taken at once to a neighboring physician, it was regarded as a simple contusion and lotions prescribed. The next morning the child was brought to us and a careful examination revealed a fracture of the upper third of the femur. No displacement, crepitus, nor edema was present, and not much pain, but on gentle manipulation a hinge-like motion demonstrated the bony lesion. There was no tendency toward displacement, and as the body showed certain signs of rickets, it was evident in this case that a thickened periosteum extended over the break which, combined with muscular fixation and superimposed fat, rendered the case somewhat obscure.

My observations on rhachitic subjects, made since 1894, at the New York Post-Graduate Hospital, may be of some interest. In certain cases of bow-legs, where the deformity was of such a nature as to require the removal of a wedge from the tibia, after such a removal, instead of chiseling the fibula, I have forcibly straightened the leg after the manner of *a brisement forcé,* and after full correction the condition of the fibula was noted. In no case was the periosteum completely torn, nor was there any tendency toward displacement at the site of fracture; in fact, these cases were typical, subperiosteal fractures of the fibula produced artificially.

These cases are brought to us by the parents or friends, with a history of slight or moderate trauma, as a rule. If recent, edema is absent or slight and ecchymosis usually absent. Where only one bone is the seat of this particular lesion, as in the forearm, we must look for it, in order to discover it, and the only safe rule is to look for this sort of fracture in every trauma to the limbs, no matter how slight. These fractures have been overlooked where a fairly careful examination for bone lesion has been made, and our manipulations must be of a particular kind as well as exceedingly gentle to demonstrate them, and at the same time not damage the parts. My method is as follows: The bone to be examined is held in one hand, at the middle third, while the lower end is grasped and an attempt made to gently sway it back and forth. If a subperiosteal fracture be present, a hinge-like motion is appreciated at some portion of the shaft under examination. During such manipulation no crepitus is elicited. There is no tendency to overriding, and pain is absent or slight. The entire shaft is examined after this manner. The bone should never be grasped and an attempt made to forcibly rub the fragments of a supposed fracture together.

The chief features based on the cases which have come before me are as follows: 1. Trauma, often slight or of moderate severity, is usually from direct violence. 2.

Pain may be absent or slight, seldom severe. 3. Deformity is absent; exceptionally there is slight sagging, as where both bones of the forearm are involved, never any overriding. 4. The function usually has but slight impairment, seldom complete loss. 5. Crepitus is always absent. In connection with the above the examination will show a hinge-like motion at the site of the lesion, which is typical of these fractures.

A simple yet complete classification of fractures is of value both to the student and teacher, and by reference to the following table we see just where this type of fracture belongs. This table is based on the fractures treated by us at the Roosevelt Hospital Dispensary during five years ended Sept. 1, 1898, aggregating 1029 cases, of which 841 were fractures of the long bones, and of these 423 occurred in patients under 16 years of age.

Fractures.
- **Simple, 423.**
  - **Complete, 353.**
  - **Incomplete, 70.**
    - **Greenstick, 57.**
    - **Sub-periostal, 13.**
- **Compound.**

When we bear in mind that these are hospital statistics, I feel I am justified in stating that the subperiosteal fracture occurs more frequently than indicated by this table. Many of our fracture cases, and this is especially true of the obscure ones, have been subjected to harsh and unnecessary manipulation before they reach us, and in this way cases have been converted from the subperiosteal type into the simple complete fracture.

It will be of interest to compare the subperiosteal fracture with the simple complete one, which I have done in the following table.

	Subperiosteal.	**Simple complete fracture.**
1. Trauma.	**Usually not severe. Direct.**	**More severe. Direct or indirect.**
2. Pain.	**Absent or slight.**	**Marked. Often severe.**
3. Function.	**May be only slight impairment.**	**Usually marked loss, often complete.**
4. Deformity.	**Usually none.**	**Present or easily produced.**
5. Edema.	**Slight or absent.**	**May be marked.**
6. Ecchymosis.	**Usually absent.**	**Often present.**
7. Crepitus.	**Absent.**	**Present.**
8. Mobility.	**Hinge-like motion.**	**Complete.**

At one time I was of the opinion that in the younger children we were more apt to have subperiosteal fractures, while in older ones the green-stick variety would preponderate, taking into consideration all incomplete fractures brought to us, but this opinion was probably due to the greater liability of subperiosteal fractures occurring in rhachitic bones before the stage of sclerosis.

I think it may be said that a "false diagnosis," or rather a lack of appreciation of the true state of affairs, is more often due to the neglect of a systematic examination than any other factor, and this is certainly true as regards the recognition of the subperiosteal fracture. As a rule in these injuries, the parts are favorable for a complete examination, but this must be systematic, the manipulations must be made in the proper manner and with due gentleness, and the anatomy of these fractures must be borne in mind.

Where these cases are overlooked they will develop undue pain and possibly excess of callus formation, with some angular deformity later on, due to sagging at the point of fracture. In fact, we have had cases brought to us where the first sign noted by the parents has been either bony thickening, or a slight angular deformity, and many of these were undoubtedly subperiosteal fractures following a slight trauma, and not recognized or treated. I can bring to mind several cases where children have received injuries, have concealed their existence from their parents, and where later a slight angular deformity followed. In each case loss of function was absent or trifling.

As regards treatment, simple fixation has been practiced, either by means of lateral splints, the starch dressing, or the plaster-of-Paris cast. In my hospital cases I have continued the fixation for four weeks, as a rule, though I am satisfied that in many cases repair has occurred somewhat sooner. The amount of provisional callus thrown out is always less than in the complete fracture, and in some cases it has been impossible to detect callus formation during the process of repair.

Various forms of incomplete fractures have been recorded and described. Some of these are frequent, have certain anatomic features, and may be recognized by certain clinical symptoms. Others occur more rarely, may be due to some peculiar combination of force, attitude, and constitutional dyscrasia, and do not give rise to any diagnostic group of clinical symptoms. Of the simple incomplete fractures of the long bones in the young, we have two principal types, the green-stick and the subperiosteal.

CONCLUSIONS.

Subperiosteal fractures usually present certain typical symptoms, and we should be able to recognize these lesions and differentiate them from the complete fractures.

Their union is characterized by the formation of a slight amount of callus, and solid union takes place in considerably less time than in the complete fracture.

In every contusion to the limbs, in the young, no matter how slight, a systematic search should be made for this particular lesion.

In rickets there is a greater liability toward the occurrence of incomplete fracture, and especial liability during the stage of softening for the production of the subperiosteal fracture.

Many cases of subperiosteal fracture are undoubtedly converted into simple fracture through improper manipulation or by too forcible examination.

In submitting these preliminary observations I wish to express my appreciation of the many courtesies extended to me by Dr. Alexander B. Johnson and Dr. John McGaw Woodbury.

THE FREQUENCY OF RICKETS IN INFANCY IN BOSTON AND VICINITY.

BY JOHN LOVETT MORSE, A.M., M.D.
BOSTON.

My attention was directed to this subject by the apparent frequency with which a rosary was met with in the routine examination of infants. There seemed to be but two explanations for this frequency—either rickets was much more common in infancy in this vicinity than was commonly supposed, or else a rosary was normal and not an evidence of this disease.

In order, if possible, to answer these questions, 400 infants under 2 years of age were examined in the medical out-patient department of the Infants' Hospital, during June and July, 1898, for evidences of rickets. The majority of these children came from the more densely populated districts of Boston, Cambridge and Somerville; the rest from other parts of these cities and from the neighboring towns. The hygienic conditions of their homes were probably often of the worst, usually bad and rarely good. These 400 cases were consecutive, none being omitted for any reason. The cause of their attendance at the hospital was not, except in a few instances, rickets, but a great variety of diseases, mainly gastro-enteric in origin.

In this investigation evidences of rickets were sought for mainly in the bones. It was recognized, of course, that as the result of the impaired nutrition in rickets changes occur in all the tissues. It was deemed impossible, however, to detect these changes, or at any rate to be able to attribute them with certainty to rickets, except in the case of the bones. Here only could the changes be considered at all characteristic.

The following changes in the osseous skeleton were considered as evidences of rickets and were sought for in every case:

1. Increase in size of the frontal and parietal eminences.

2. Failure of the anterior fontanelle to diminish in size as rapidly as normal or to close at the usual time. The normal time of closure was placed at eighteen months; late, if anything.

3. Open sutures and craniotabes.

4. Delayed eruption of teeth. It was considered that an infant should have 1 tooth at 8 months, 2 teeth at 9, 6 at 12 months, 12 at 18 months, and 16 at 2 years. These figures are all rather later than the average.

5. Rosary. In order to avoid error only those enlargements were considered as a rosary which could be felt both parallel and vertical to the long axis of the rib. Three grades were distinguished; slight, medium and marked.

6. Other deformities of the chest: *a.* Protrusion of sternum. *b.* Retraction of sternum. *c.* Retraction at the insertion of the diaphragm and flaring of the lower chest.

7. Enlargement of the epiphyses at the wrists and ankles.

8. Deformities of the long bones of the extremities: *a.* Bow-legs. *b.* Knock-knees. *c.* Bowing of the arms.

Three other points were also studied as being important and common manifestations of rickets, although not diagnostic, as are the skeletal changes. These were: 1. Weakness of the spine. It was considered abnormal if the infant was not able to hold up its head alone at 3 months, and sit alone at 8. Marked general kyphosis—

the curve of weakness—was also considered abnormal even if the infant could sit alone.

2. Marked enlargement of the abdomen.

3. Splenic enlargement. The spleen was considered enlarged only when it could be felt.

Only 82 of the 400 cases, or 20.5 per cent., showed none of the above signs of rickets. This number, moreover, is really larger than it should be, as it includes many babies only a few days or weeks old. At this age perceptible osseous changes have hardly had time to develop. Unfortunately no accurate data were kept with regard to the diet and surroundings of these cases. My impression is, however, that the great majority of them were breast-fed, and that they had no better surroundings than the others.

The fact that 20 per cent. of these 400 infants had no rosary shows conclusively that a rosary is not a normal occurrence in infancy, but an evidence of disease. Corroborative evidence in this connection is the fact that a considerable number of infants examined in private practice, who were properly fed and lived in the best hygienic surroundings, failed to show a rosary. Further proof that a rosary, palpable during life, is abnormal, is furnished by the fact that slight beadings, imperceptible during life, are often found post-mortem and microscopically show marked rachitic changes.

Three hundred and eighteen, or 79.5 per cent. of the 400 cases showed more or less marked evidence of rickets. That is, if these 400 may be considered representative, and there seems no reason why they should not be, 80 per cent. of the poorer classes of Boston, Cambridge and Somerville suffer from rickets. This percentage is larger than *a priori* would have seemed possible. The explanation probably is that a large proportion of the cases were mild and would not ordinarily have been recognized as rickets unless a careful examination had been made. It is probable too, I think, that rickets is absolutely on the increase.

The ages, by months, of these 318 cases were as follows:

1 month	4	13 months	14
2 months	13	14 months	11
3 months	25	15 months	10
4 months	20	16 months	10
5 months	20	17 months	1
6 months	24	18 months	9
7 months	22	19 months	1
8 months	24	20 months	10
9 months	28	21 months	6
10 months	23	22 months	2
11 months	16	23 months	4
12 months	21		

These figures are of little value as showing the relative frequency of rickets at various ages, because they show only the relative proportions in the 318 cases, and not the proportion of cases of rickets to the total number of children living at these ages. They do not show, for example, that rickets is more common in the first year than in the second, but only that more babies under 1 year were brought to the hospital than from 1 to 2. They do, however, emphasize the fact that rickets is very common in the first year, and that well-marked bony changes may be produced, even in the first month of life.

The analysis of the individual symptoms in the 318 cases, under the conditions detailed above, gives the following results:

1. Enlarged eminences: frontal alone, 7; parietal alone, 35; frontal and parietal, 18; that is, 60, or 19 per cent. The youngest of these patients was 4 months old, but only 12 were under 9 months. The shape of the head was hydrocephalic in type in 2, and asymmetry of the head and flattening of the back of the head were each noted in 1 case.

2. The anterior fontanelle was larger than normal in 49 cases, or 15 per cent. The youngest of these was 5

months old. The posterior fontanelle was open in 5, varying in age from 5 to 10 months. The anterior fontanelle was prematurely closed in 4, whose age ranged from 7 to 11 months.

3. The sutures were open in 1 patient, and craniotabes was present in 1 other.

4. Dentition was delayed in 98 of the 190 infants 8 months or more old, i. e., 52 per cent.

5. Rosary: This was slight in 172, or 54 per cent., the only symptom in 103, with one other in 40. It was medium in 103, or 33 per cent., the only symptom in 24, with one other in 23. It was marked in 43, or 13 per cent., the only symptom in 4, with one other in 3. Of these 318, it was therefore the only symptom in 131, or 41 per cent., with one other in 66, or 21 per cent.

ROSARY AND ONE OTHER SYMPTOM.

Rosary.	Slight.	Medium.	Marked.	Total.
Delayed Dentition	17	7	1	25=38 per cent.
Large Eminences	8	3	1	12=18 per cent.
Large Fontanelle	5	2		7
Large Epiphyses (Wrists)	3	3	1	7
Large Abdomen	3	3		6
Weak Spine	2	3		5
Splenic Tumor	2	1		3
Retraction at Diaphragm		1		1
	40	23	3	66

That is, a rosary was present in every case. It was the only sign in 41 per cent., and was associated with but one other sign in 21 per cent. Slight degrees of beading were much more common than the more marked and, as would be expected, were more often the only sign than were the severe forms. Delayed dentition was the most common single associated symptom, and enlargement of the cranial eminences the next. This relation corresponds to that given by them when considered as single symptoms.

6. Other deformities of the chest were: protrusion of sternum, 1; retraction of sternum, 2; retraction at diaphragm and flaring of lower chest, 43, or 14 per cent. But 4 of these were under 9 months old.

7. Enlargement of epiphyses occurred: wrists alone, in 48; ankles alone, in none; wrists and ankles, in 2, a total of 50, or 16 per cent. The youngest of these was 5 months old. Only 8 were under 9 months. The great preponderance of enlargement at the wrists is striking.

8. Deformity of the long bones of the extremities was noted as follows: bow-legs, 16; knock-knees, 1; both, 1; bowing of arms, 2; a total of 20, or 6 per cent. The age of these was rather evenly distributed among the months between 5 and 23. The very small number presenting deformities of the lower extremities is probably to be explained by the fact that the great majority of the children were under 1 year old, before which time little or no weight is borne on the legs.

Weakness of the spine was noted in 42, or 13 per cent.; 13 of these were under 9 months old.

Marked enlargement of the abdomen was present in 47, or 15 per cent.; 15 were under 9 months, 4 of them being only 3 months old.

Splenic tumor was detected in 24, or 8 per cent.; 9 of these were under 9 months, and one was but 2 months old.

Too much importance must not be attached to these last three signs, as they are not all characteristic of rickets and may occur as the result of many and varied conditions. In these cases they may as well have been symptoms due to the same cause which produced the rickets. or to complications, as to the rickets.

A summary of these figures shows that a rosary is the most common symptom of rickets, in fact that it is an invariable symptom. It may be developed very early, even in the first month of life. It is the only symptom in about 40 per cent. of the patients under 2 years old. When it is the only symptom it is more likely to be small or medium-sized than large. It is accompanied by but one other symptom in 20 per cent. of the patients. This associated symptom is most frequently delayed dentition; next, enlarged cranial eminences. The next most common symptom is delayed dentition, which occurs in more than 50 per cent. of all cases. Enlarged cranial eminences are present in about 20 per cent. Abnormal size of the anterior fontanelle, retraction of the chest at the insertion of the diaphragm, with flaring of the lower ribs, and enlargement of the epiphyses each occur in about 15 per cent. Although these deformities are occasionally found in infants as young as 4 months, but few of them are met with under 9 months; that is, compared with the rosary, they are symptoms of somewhat late development. This is more evident when we consider that the majority of the patients were not over 9 months old. Enlargement of the parietal eminences is much more common than that of the frontal. Craniotabes is very unusual. Other deformities of the chest, besides retraction at the insertion of the diaphragm and flaring of the lower ribs, are rare. Enlargement of the epiphyses at the wrists is common; of those at the ankles, rare. Deformities of the long bones of the extremities are uncommon under 1 year of age. Bow-legs is by far the most frequent form. Weakness of the spine and abdominal enlargement are met with in about 15 per cent. and splenic tumor in about 8 per cent. of the cases of rickets in patients under 2 years old. These symptoms, while probably due in many cases to the rickets, are certainly not in all.

The parentage of the 318 patients was as follows: Russian and Polish Jews, 122; Irish, 93; American, 32; English, Scotch and Canadian, 17; Negro, 15; Italian, 15; German, 11; French, 7; Swede, 2; Finn, 2; Portuguese and Syrian, each, 1. These figures must not be taken, however, as denoting the relative frequency of rickets in the various races. They merely show the relative proportions of the races that attend the clinic and make up the poorer classes. They are of importance, nevertheless, in that they show that no race is exempt from the disease and that the cause must be sought elsewhere.

An attempt was made to determine what had been the diet of these infants. It was found impossible, however, to make anything out of that in those over 9 months old, as the children of the classes from which these came are almost invariably given everything to eat after that age. The diet of the 180 not over 9 months old was as follows: breast only, 31; breast and cows' milk, 20; breast and condensed milk, 11; breast and general diet, 12; breast and proprietary foods, 3 (=77); modified cows' milk, 17; cows' milk and water, 24; cows' milk and general diet, 7; condensed milk, 26; condensed milk and general diet, 2; various proprietary foods, 27.

The great variety of foods used in these cases and the large number of children which were fed on the breast alone—the ideal food—or on the breast in combination with other foods, seems to show rather clearly that the food can not have been the most important factor in their etiology.

Since race and diet are not sufficient to satisfactorily account for the origin of the rickets in these cases, some other influence, acting on them all, must have been at work. The only one common to all is improper hygienic surroundings. These, therefore, must be considered, in this vicinity at least, to be the most potent cause of rickets in infancy.

CONCLUSIONS.

The following conclusions seem to a certain extent justified: 80 per cent. of the children under 2 years old, of the poorer classes of Boston and the adjacent cities, have rickets. A rosary is not a normal phenomenon but is an evidence of rickets. It is a constant symptom of rickets. It is the earliest symptom to develop and in 40 per cent. of all cases in patients under 2 years old, is the only symptom. The next most common symptom is delayed dentition. Other symptoms, while they may show themselves at any age, do not, as a rule, develop earlier than the tenth month. The cause of rickets in Boston and vicinity is to be found in improper hygienic surroundings rather than in race or diet.

THYROID EXTRACT IN JUVENILE OBESITY: A CLINICAL NOTE.

BY I. N. LOVE, M.D.
ST. LOUIS, MO.

Animal therapy is at this time an alluring subject, being unquestionably all in all the most revolutionary made in years toward the physiologic cure of disease. The medical profession should, figuratively speaking, bow its head in humble apology to the great physiologist and psychologist, Brown-Séquard, for when he contributed to his guild views which were the product of long years of delving and study, they were temporarily received with enthusiasm, but after only superficial consideration were laughed at as the product of a brain suffering from senile decay. We are now beginning to realize, as he did, that in the ductless glands lies the entire scheme of tissue building, repair, life. In this department of work the already established value of the thyroid gland in myxedema, obesity, idiocy, some forms of insanity and other conditions due to interrupted or misdirected metabolism is familiar to all, and favorable clinical evidence is accumulating constantly. More recently the reports on the use of the suprarenal glandular extract in Addison's disease opened up additional lines of experimentation. I should enjoy discussing the entire broad field of glandular therapeutics, but it is my purpose only to present brief clinical experience in the use of thyroid extract in the treatment of juvenile obesity.

At the Louisville meeting of the Mississsippi Valley Medical Association, in October, 1897, I reported, favorably, the treatment of four cases of this kind, children ranging from 6 to 10 years of age, weighing from 106 to 170 pounds. Since that time three more cases have come under my care, and have been under treatment for from twelve to sixteen months.

The most characteristic one of these, B. W., a boy aged 8 years, weighed on first presentation to me 131 pounds, was quite tall for his age, but excess of fat was the chief cause of extra weight. He was fairly bright, intelligent and cheerful, but becoming quite sensitive from being called "fatty" by his playmates. I found that his weight had made him quite "luggy," so to speak, and he had gradually become more and more disinclined toward physical exertion. He was quite constipated, not a "hearty" eater, and not specially inclined toward sweets.

I prescribed proper purgation and a course of medication and diet which would antagonize the constipation and favor a general activity of the secretions, regulating the diet by proscribing fats and sweets, and instructing him to eat freely of fruits and vegetables, such as tomatoes, cabbage, spinach, sauerkraut, etc. I also ordered him to pay especial attention to all hygienic rules, such as bathing and massage, and in particular to take plenty of exercise, walking, running, jumping, horseback riding, croquet, and all out-door athletic games.

I then ordered one-half of a 5-grain tablet of thyroid extract to be taken three times a day, and gradually increased the quantity until one tablet was taken four times a day. I observed that with the general increase of the thyroid a general improvement occurred. Within three months he had lost ten pounds in weight, and now, after about fourteen months of treatment, he weighs 106 pounds. The chief feature of his case, however, is that he has developed, very definitely and distinctly, muscle to a considerable degree. He is more active and alert in appearance, both physically and mentally. He lives in an adjoining state, and I see him once every month or two.

This case and the others similarly treated will necessarily be under observation for several years, possibly until complete maturity has been attained, or at least until they have "out-grown" the disposition toward obesity. General attention to exercise and hygiene on the part of the patient has been a factor in the management of the case, but there is no question in my mind that the thyroid has been of great service.

I found, commencing about three years ago, that a most excellent drug to be taken in connection with the thyroid, with a view to prevent depression and unpleasant effects, was strychnia, in doses ranging from 1/150 gr. to 1/50 gr. Not only is strychnia one of our best tonics, but it is almost specific in its helpful effects on the nervous system and on all processes of nutrition. During the past year, for convenience, I have had tablets of thyroid made in two sizes, 2½ and 5 grains respectively. I have combined the strychnia with the tablets, the 2½-grain tablet carrying 1/150 gr. of strychnia, and the 5-grain tablet 1/50 gr. By using either the one or the other of these tablets, in division or without breaking, the thyroid and strychnia have been regulated easily.

We can not too thoroughly appreciate the fact that the best results can be gotten in all of these errors of growth and development in children by commencing the treatment early. The profession and the public should be generally informed that there is a good chance of greatly improving these unfortunates. The results achieved in the treatment of the victims of cretinism and idiocy have been almost brilliant. The results which I have accomplished in my own cases have encouraged me in the hope that, as time passes, we may be able to cure the victims of juvenile obesity, and thus save them for valuable positions in life, rather than their being burdens to themselves and having open to them little in the way of a livelihood save service in the side-shows of circuses or dime museums, with the other freaks and blemished victims of Nature's apparent blunders.

DISCUSSION.

Dr. A. C. Cotton, Chicago—I have listened to this paper with considerable interest, for I have had a limited experience with the thyroid extract, outside of the treatment of cretinism. I have had three adult cases on thyroids for the reduction of obesity. A more or less marked reduction of the obesity has been effected, but in two of them there has been an unpleasant symptom, i. e., headache. One patient could take 5 gr. of the thyroid extract three times a day, but when this dose was increased to 10 gr. three times a day she complained of headache, and I found no way of correcting that. I would like to ask Dr. Love whether he has observed headache following the administration of thyroid extract.

Dr. I. N. Love, St. Louis, Mo.—I have had to regulate the dosage with both children and adults according to the effect, one of the disagreeable ones being, at first, headache. I have always observed some depression of the heart. This was why I was led to combine strychnin with the thyroid extract. I consider obesity in itself, in the adult, a misdirection, as it were, of metabolism. The nutritive processes are interrupted, and on general principles we should encourage elimination, activity of the circulation and all that will favor the establishment of the proper equilibrium of tissue building. In the ductless glands—of which the thyroid is one—we have important remedial agents. My experience also leads me to believe that the combination of strychnin with thyroid makes the treatment more favorable.

Dr. G. M. Blech, Chicago—Have you ever examined the thyroid gland in your patient before prescribing the thyroid extract?

Dr. I. N. Love—I have not been able to observe very much apparent change in the thyroid gland. I do not believe the interruption of metabolism is always dependent on this gland. I feel like emphasizing the point made by one of our pelvic surgeons in America, in a paper read before the Mississippi Valley Medical Association—Dr. Sherwood-Dunn. He spoke of "The Conservation of the Ovary," and drew attention to the fact that it was related to the gland which had to do with tissue building. He argued that the ovary should be conserved to the fullest. I think our surgical friends—more particularly the younger men—should be warned against the needless emasculation of women. This point should be borne in mind in this connection.

SEPTIC CONDITIONS IN SOME OF THE ACUTE INFECTIOUS DISORDERS IN CHILDREN.

BY A. C. COTTON, A.M., M.D.
CHICAGO.

It has been the custom of lecturers and writers to discuss disease by types, the classification depending on certain groupings of symptoms and signs as indicating a particular disordered condition known as a disease. Within certain limits, variation in character, cause, duration, or sequence of symptoms was allowed without a change in name other than prefixing atypical. So also many well-known, and some rare, manifestations were observed and acknowledged under the terms, "complications," "sequelæ," etc., without, however, requiring a change in the established generic name of the disease. In the description of certain pathologic conditions the modifying terms, such as "acute," "subacute," "chronic," "retarded," "latent," etc., were employed to express at least the stage of the morbid process, though some of the conditions there described were so dissimilar that no relationship was discoverable save that of the name. In the acute infectious disorders, so loath have we been to surrender our nosology that great inconvenience and much confusion has obtained in clinical observation and discussions, the atypical prevailing much more frequently than the type, and the varying complications presenting much graver conditions than the presumed original disease.

As a poor hypothesis is better than none, it is probable that our present nomenclature has served a useful end for the accumulation and classification of clinical data.

As to persistency of type, probably no class of disorders presents so uniform grouping of symptoms as the exanthemata, yet the possible variety of complications and sequelæ renders the prognosis as uncertain as when dealing with some new and unknown disorder.

Thus far we have been obliged to accept such vague expressions as "climatologic influences," "epidemic characteristics," "individual idiosyncrasy," etc., in explanation of the widely differing results in these presumably familiar, acute infectious disorders. With the advent of bacteriology new light has dawned on infection, and etiology has become the quest of the hour. That the advancement of bacteriology toward the claims of an exact science will soon compel sweeping revision, if not a complete overthrow, of our nosology, few will deny. Since clinical diphtheria is no longer a recognized entity, and Klebs-Loeffler diphtheria—pure and simple—a *rara avis,* the question may well be raised, why not discard a name which no longer carries any pathologic or etiologic significance? Since influenza without the bacilli of Pfeiffer is like the play of Hamlet without the melancholy Dane, why offend our sense with the persistent abuse of the term? For many years that revered term "pneumonia" has required so much propping up with adjectives that the careless tripper may bring down the entire pulmonary pathology about his ears. As went the ancient "dropsy," "jaundice," "biliousness," and "neuralgia," so must we bid adieu to the terms "influenza," "diphtheria," "pneumonia," and "rheumatism," or, if we retain these names at all, they must be so loaded with modifications as to serve only as entertainment to the laity. The query, "what's in a name?" may well apply to our present classification when we consider our newer methods of clinical study, with their inexorable conclusions.

The effort to isolate the etiologic factor in morbid processes impels one to follow the chief mischief-maker, and whether we find him most active at start or finish, we keep him in view, regardless of the old clinical boundaries between inception, development, convalescence, recrudescence, complication or sequel. By persistence in analytical methods of study, we are at last beginning to recognize our real enemy among the factors of uncontrollable morbid processes. An antitoxin has been found that will do all that is claimed for it, viz., minimize the intoxication from pure Klebs-Loeffler bacilli, but that it will cure diphtheria as clinically recognized can not be maintained in the face of the still high rate of mortality. The apparent fact that clinical diphtheria was Klebs-Loeffler diphtheria and something else, has led to the most searching scrutiny as to what the something else was, and I believe no one will deny that the complicative factor which renders the intoxication uncontrollable is often due to the presence of the streptococcus. Whether we ascribe to this microbe additional toxic virulence of its own, or accept the hypothesis of symbiosis, the fact remains that in the graver forms of mischief he is present, and that intractable cases very rarely develop in his absence. So too in pneumonia, in pertussis, in measles, and above all in scarlatina and influenza, the intractable cases are rarely distinguished by the absence of the streptococcus. So evident has this become that the term "strepthemia" has frequently served in clinical description.

In this connection hasty revision of my case records for the past year inclines me quite strongly to the older theory of the "unity" of poisons in the etiology of acute infectious disorders. During the past season clinical influenza was quite prevalent in our city, and as seen by me, shows, among the severe cases, over 85 per cent.

otitis media with streptococcic infection. Pneumonia of this variety of infection has been unusually prevalent among children, with over 75 per cent. of middle-ear infection. Pure Klebs-Loeffler diphtheria has been rarely seen, and was of a mild type. Scarlet fever, with membranous angina, with pneumonia, diphtheria, and with otitis media, has occurred in several cases, varying greatly in the intensity of the different complications, but showing uniformity in the presence of the streptococcus. An unusually large percentage of the relatively rare scarlatinal arthritis has appeared. And in violation of the general rule, Klebs-Loeffler diphtheria has, in a number of instances, accompanied the scarlatina from the onset, while the streptococcus has appeared sooner or later in nearly all. Pertussis and measles have shown unusual tendency to grave and persistent pulmonary complications, and the general tendency to extensive adenitis with an unusual number of suppurations marked by tardy recovery has been the rule.

It is to secure an expression from my associates in this Section, believing there is profit in comparison, that I present these few not well-classified observations, and I would like to ask the question: "Is this a streptococcus year?"

Treatment.—Since it appears, from the deductions of numerous competent observers, that it is the mixed infections that are the most intractable and fatal, whether by symbiotic action intensifying the toxicity of their products, or by the induction of fatal anemia by the prolonged demand for the antitoxin substance from the overworked blood-regenerating organs, it stands to reason and is apparently borne out in practice that three distinct lines of therapy must be followed in every infectious disease: 1. Prophylactic, as against the additional development of any other septic organism: All points of entrance, especially catarrhally-affected mucous areas, which under these conditions furnish rich culture-media for pathogenic micro-organisms innocuous under ordinary conditions must be carefully guarded by frequent application of local antiseptics. 2. Specific antitoxin treatment should be thoroughly employed, even when the presence of the specific toxin-producing microbe is not demonstrable, especially in infections that are favorable to others through some law of affinity not well known, and particularly during known prevalence of other infectious diseases, as in epidemics. 3. The application of the best-known principles of hygiene, with all the medical and dietary agents that go to promote healthful metabolism and powerfully reinforce the antitoxin-producing processes of the body, the great *vis medicatrix naturæ.*

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DISCUSSION.

Dr. C. G. Slagle, Minneapolis, Minn.—All radical reforms, so far as I know, have met with more or less opposition, and in many instances, even with ridicule. This was the case even with the great discovery of Jenner. He was caricatured and denounced as a visionary, and some of the medical journals of the day even printed cartoons showing horns growing out of the heads of children, the supposed results of Jenner's ideas and practice. Professor Cotton is among the pioneers in a new field, which we older men appreciate. Bacteriology is opening up a new field which will materially aid us in that very intricate subject of diagnosis. In the end there is bound to be a revolution in medicine, but if you push it, as Professor Rotch has endeavored to do; if you attempt to thrust these new ideas upon us all at once, the effort may result in failure, or at least it will retard progress. When I received Professor Rotch's book I was intending to lecture the next day on struma. I could not even find the word "struma" nor "scrofula" in the index, the appendix, in a foot-note or in a marginal reference. I did not find the word "dysentery." I looked further and did not find "croup," nor the word "colic." The familiar one, "diathesis," was not in the book. I addressed the author on this subject, and he replied very courteously that in dropping these old and unscientific terms he was only following out the suggestions of the American Pediatric Society. I remonstrated with him, and said that I did not believe that even such a master as he was could, by any one dash of his brush, obliterate all those old landmarks which had become as familiar as household words, not only with the laity but with physicians. You can not take any of the older books on medicine, and not find the words "scrofula," "struma," "dysentery," "diathesis," etc. It is all right enough to admit that these words are unscientific, and we must prepare for a revolution in medicine in the direction suggested in the paper of Dr. Cotton, but it will come better and faster if we do not push it too much. In medicine, as in literature, custom to some extent becomes law. These old medical terms must go in time; they are obsolescent now, and in due time will be obsolete. The paper is tremendously suggestive, and will bear discussion for a long time. The cause of the complication, otitis media, is something which we have just discussed. Streptococcus infection is quite prevalent now: it was probably so before, but was not recognized.

Dr. G. M. Blech, Chicago.—There are few papers left for this session, and I think, therefore, it would be well for Profesor Cotton to favor us with his clinical notes, not to substantiate his claims, but as a matter of record. Concerning the difficulty of changing terms, as suggested by our friend, Dr. Slagle, this is an age of progress, and when we come to consider that certain terms have lost their value or meaning etymologically, they must go. There is no such thing as "scrofula"—there never was—and the only reason we used the term was because we did not know its pathology. We now know nothing but tuberculosis of the glands—"scrofulosis." The demonstration of the tubercle bacillus in the glands, or in the structures attacked is the plain justification of the omission of the word "scrofula." This term meant nothing; it gave only a very vague idea of a disease which was in reality nothing but tuberculosis. The same argument applies to the other terms referred to. They must all go since pathology has given us a definite idea of their nature.

Dr. N. P. Barnes, Washington, D. C.—With all due respect to the statements of my friend, Dr. Blech, I have under my charge a large number of children in an out-door clinic, and I see many cases that may be tubercular, syphilitic, or rheumatic. These diseases seem to cross somewhere, or are so intimately associated that we can not say positively: "This is a case of tuberculosis." I do not like the word "scrofula," but there are conditions for which we can not substitute the term "tubercular lymphangitis."

Dr. Edwin Rosenthal, Philadelphia.—The last speaker is right. Not every case of lymphatic enlargement is tubercular, nor can we say that each case must have a certain name to indicate a disease. As to the late books, Holt gives "lymphatism" as the name of a disease and this can exist in those entirely free from such specific causes. I have met several cases of lymphatic disease that I am certain—and as certain as the bacteriologist is, who pronounces a cause—were neither syphilitic, scrofulous, strumous, nor tubercular, but simply depended on some condition as yet unknown. It is well to drop terms that give erroneous impressions, but we should do so at a slower pace, and when we do, we should have correct names to give.

I remember cases sent to the Municipal Hospital—the contagious disease hospital of Philadelphia—suffering from "glandular fever" (?). This was neither scarlet fever, nor diphtheria, nor tubercle, nor syphilis, and still it was thought best to send them to this hospital. The bubonic plague is another glandular disease that is not tubercular; and we can go on multiplying, in answer to Dr. Blech. This much we do know: when the term "scrofula" was used we knew that consumption was the danger; its origin might have been syphilis or tubercle; the result was always the same and, hence this old name, which now appears useless, had its value in its time.

Dr. G. M. Blech.—Not every adenitis is tubercular any more than every vaginal discharge is gonorrheal in character. These things have been settled more than one year ago. The fact that certain glands are diseased does not prove that they are tuberculous. There are other forms of adenitis. I referred to that condition formerly commonly spoken of as "scrofulosis," and I assert that it is nothing more than tuberculosis. The use of these vague terms enables us to avoid making a correct diagnosis. By microscopic examination we are able to make a correct one of tuberculosis or syphilis, and then we can determine the particular form of adenitis with which we are dealing.

Dr. N. P. Barnes.—We see hundreds of children with swollen glands about the neck. We can not at all times open these and examine them microscopically, nor are we justified in the measure when, under syrup of iodid of iron, these glands assume their normal dimensions.

Dr. G. M. Blech.—How long have you watched these cases?

Dr. Barnes.—Some of them for 4½ years and I have never noted any cough or pulmonary symptoms during this time, that would be indicative of incipient phthisis.

Dr. Blech.—In all of these tubercular forms of adenitis there is usually an infiltration of the apices of the lungs, and by physical examination of the apices of the lungs, evidences of pulmonary consolidation can be discovered. A little of the gland can be withdrawn with a hypodermic needle, and the presence of the bacilli of tuberculosis demonstrated by microscopic examination.

Dr. A. C. Cotton.—I confess that my sympathies run in the line of the views presented by Dr. Slagle. I make confession to what I consider an error on my part in teaching, i. e., using the old and indefinite terms because they are so convenient. I now believe that I have done my pupils injustice in this respect. The use of indefinite language leads to errors in thinking, and this will eventually crop out in the treatment of our patients. No matter how handy it may be to talk about diathesis and things of that kind, it is not right. I agree with Dr. Slagle that too sudden and sweeping changes are not advisable. We must remember, when we write and speak as teachers or as compilers of statistics or data, or when we make deductions for the whole medical profession, that we must not go over the heads of the mass of the profession, We must go slowly, yet we should always urge ourselves to the point of definiteness and accuracy, keeping as close to the etiology as possible.

Now, how many of you have struggled with a case of so-called diphtheria with a mixed infection and have finally had to surrender to the unknown, although you have worked faithfully, and have learned, perhaps a year later, that some one else has been called in because he cured some patient with diphtheria in the same block, at the time you lost yours. How heart-breaking that is. There is something more than pecuniary reward in the practice of medicine. It may be all right for you to tell some man that he will be well after he has taken your blue mass and salts, because he has an attack of "biliousness"—this is a term which most of us use—but when you touch on the acute intoxication, should you give our whole cause away by using terms which the laity think they understand? For our own protection, is it not worth our while to avoid using terms which the laity think they know all about? The pessimistic views of Dr. Blech are as refreshing as was the cool breeze last night. I am not so pessimistic; I can not make a diagnosis of tuberculosis as early as Dr. Blech thinks he can. He probably can, and I shall look to him to teach us all.

Dr. Blech.—I wish to call Professor Cotton's attention to a little remark much in vogue in my native country. *Am Ende hat Jedermann ein bischen Tuberculose* (after all, everybody has a little tuberculosis).

MINUTES

FIRST DAY—JUNE 6.

The meeting was called to order by the Chairman, Dr. Henry E. Tuley, of Louisville, Ky., who then delivered the annual address.

On motion, Dr. E. D. Cheseboro, of Providence, R. I., and Dr. J. A. Work, of Elkhart, Ind., were elected to fill the two vacancies on the executive committee.

Dr. Ernest Wende, of Buffalo, read the first scientific paper, "The Death-Dealing Long-Tube Nursing Bottle. It was discussed by Drs. Norbury, A. C. Cotton, and the discussion was closed by Dr. Wende.

Dr. H. M. McClanahan, of Omaha, read a paper on "Constipation in Infants." It was discussed by Drs. C. G. Slagle, Lawrence, Work, Cheseboro, Edwin Rosenthal, Harriet E. Garrison, R. C. Moore and Leonard, and the discussion was closed by Dr. McClanahan.

Dr. Edwin Rosenthal moved that the President's Address be handed to the executive committee for consideration as to the recommendations therein contained. Seconded and carried.

Dr. Frank X. Walls, of Chicago, read a paper entitled "So-Called Obliteration of the Bile Ducts," which was discussed by Dr. C. G. Slagle.

Dr. J. A. Work, of Elkhart, Ind., read a paper entitled "Some Thoughts on Physiologic Elimination in all Pathologic Conditions." Discussed by Dr. Ed. E. Mayer, of Pittsburg, and closed by Dr. Work.

Dr. Joseph Clements, of Kansas City, read a paper on "Infantile Diseases from the Standpoint of Biology," which was discussed by Dr. Slagle.

The Nominating Committee was constituted as follows: Drs. A. C. Cotton, E. D. Cheseboro and J. A. Work.

Adjourned at 4:50 p. m.

SECOND DAY—JUNE 7.

The meeting was called to order by Dr. Cotton at 2:20

p. m., in the absence of Dr. Tuley, who had been called home by an urgent telegram.

On motion, Dr. H. M. McClanahan was elected Chairman *pro tem.*

Dr. A. C. Cotton presented the report of the Nominating Committee, which was that the committee recommended Dr. Edwin Rosenthal, of Philadelphia, Pa., for Chairman for the ensuing year and Dr. Louis Fischer, of New York, for Secretary.

Dr. G. M. Blech moved that the candidates recommended by the nominating committee be elected viva voce. This was carried, and they were declared duly elected.

Dr. Ed. E. Mayer, of Pittsburg, read a paper on "Hysteria in Children." It was discussed by Drs. Slagle, Rosa Engelman, G. Blech, Harriet E. Garrison, Slagle, and Ewing, and the discussion was closed by Dr. Mayer.

Dr. C. G. Slagle read a paper entitled "Infantile Convulsions; Their Cause, Nature and Management." Discussed by Drs. Cotton, Kimball, Ewing, Work, Foster, E. E. Mayer, Engleman, and the discussion was closed by Dr. Slagle.

Dr. Gustavus M. Blech, of Chicago, read a paper entitled, "Comparative Therapeutic Value of Recent Antiseptics in Pediatric Practice." Discussed by Drs. Rosenthal, Work, Cotton, and closed by Dr. Blech.

Dr Edwin Rosenthal, of Philadelphia, read a paper on the "Treatment of Septic Conditions in Children." Discussed by Drs. Dillon Brown, of New York, Blech, Engelmann and Cotton, and the discussion was closed by Dr. Rosenthal.

Dr. Rosa Engelmann, of Chicago, read a paper on "Membranous Tonsillitis and Pharyngitis of Influenza." Discussed by Drs. Rosenthal, Slagle, Stevens, of Detroit, and Cotton, and the discussion was closed by Dr. Engelmann.

Dr. G. M. Blech moved that reprints of the transactions of the Section on Diseases of Children be ordered, and that seventy-five copies be guaranteed. Seconded and carried.

Dr. S. W. Kelley, of Cleveland, read a paper entitled "On The Semeiology of the Attitude and Motor State in Children."

Discussed by Drs. Slagle and H. E. Garrison, and the discussion closed by Dr. Kelley.

The paper by Dr. Louis Fischer, entitled "Some Points Concerning Antitoxin in the Treatment of Diphtheria" was ordered read by title.

Adjourned at 5:30 p. m.

THIRD DAY—JUNE 6.

The meeting was called to order by the Chairman pro tem., Dr. McClanahan, at 2:45 p. m.

Dr. A. C. Cotton, of Chicago, read a paper on "Septic Conditions in Some Acute Disorders of Children," which was discussed by Drs. Slagle, Rosenthal, Blech, Barnes, of Washington, and the discussion was closed by Dr. Cotton.

Dr. Blech moved that a vote of thanks be tendered the retiring officers. Seconded by Dr. Barnes.

Dr. Cotton objected to this as an innovation and a bad precedent, and then moved to lay the motion on the table. Tabled.

The paper of Dr. Charles Warrenne Allen, of New York, on the "Differentiation Between Syphilides and Cutaneous Disorders," was ordered read by title.

Dr. Harriet E. Garrison, of Dixon, Ill., read a paper entitled "The La Grippe Exanthemata." It was discussed by Drs. Slagle, Love and Clements, and the discussion was closed by Dr. Garrison.

Dr. R. B. Gilbert, of Louisville, presented, through Dr. Solomon, a paper on the "Treatment of Scarlet Fever." It was discussed by Drs. Quayle, of Madison, Ohio, Slagle, Ewing, Garrison, Bell, of Illinois, Clements, and the discussion was closed by Dr. Solomon.

Dr. I. N. Love, of St. Louis, read a paper on "Thyroids in Juvenile Obesity," which was discussed by Drs. Cotton and Blech.

Dr. Work presented the report of the Committee on the Chairman's Address. The Committee indorsed the recommendations in the address, viz.: Establishing special pediatric wards in hospitals, procuring accurate stenographic reports of the meetings of the Section, furnishing reprints of the transactions, supervising dairies and the milk-supply generally, and the care of epileptic children and school children.

On motion of Dr. Blech the report was accepted.

Adjourned at 5 p. m.

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